

ALASKA and the
CANADIAN NORTHWEST



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Our New Frontier

By HAROLD GRIFFIN



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TO

Shannon

Foreword

Far to the north of the present narrow limits of settlement, Americans and Canadians are pushing the frontiers of civilization into that vast empty land that lies between the shores of Hudson Bay and the Bering Strait and looks out over the Arctic Ocean to the Pole. Charting the trackless spaces, they are discovering, not a barren wilderness but a rugged country unlimited in the opportunities it presents for the future. For as distances shrink before the advance of modern transportation and the physical barriers between the Americas and Asia are surmounted, Alaska and Canada, China and the Soviet Union find themselves close neighbors.

New highways are probing deeper into the fastnesses of the north, preparing the way for victory over Japan and construction of the postwar world. Railroads that in years past thrust their steel a short distance into the wilds and then halted abruptly when the expected development and settlement were slow in following, now are being extended northward and westward across tundra plain and mountain range. The routes that the bush flyers pioneered, taking their bearings from unnamed lakes and peaks, are being flown by army transports, the forerunners of the big cargo planes and air liners.

Cities that once knew the feverish activity of the gold-rush days are being reawakened to vigorous life. New

cities are being planned where a short time ago there were only little settlements. Isolated trading posts and mining camps are being linked with the "outside" and men who have spent a lifetime away from the lights of the cities are speculating about the changes that will come when the anticipated thousands of new settlers flock into the northwest after the war.

The compelling need for haste has compressed into months achievements which otherwise might have taken decades. Life on the new frontier does not move at the pace of the covered wagon, but at the speed of plane and tractor. Modern engineering has spanned rivers and given a bottom to the mossy bog (or muskeg, as it is known in the North). It has torn a path through the spruce forests and carved a way across the mountains. By linking the great industrial cities of the United States with the distant cities of Alaska, United States Army Engineers have hastened victory on the Pacific battle fronts and provided a foundation for postwar construction and development.

There are parts of this story which cannot yet be told. There are other parts which have still to be written because this new development is the beginning and not the end of the transformation of the northwest. Within these limitations, the story of what is happening on this new frontier is told in these pages.

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The Frontier Changes

In a mountain valley a few score miles north of where the highway to Alaska would one day run, old Bob Henderson stood looking down at the cabin by the creekside.

The roof had long ago collapsed under the weight of many winters' snows. Only the rough-hewn log walls were still standing, the low doorway dark and vacant. Below the cabin the creek flowed cold in the green light of the northern dusk, but the primitive bridge that once spanned it was gone, swept away on some spring flood. Red willow brush had erased the trail and new forest growth hid the stumps of trees felled long ago. Fifty miles or more down the Pelly River from nearby Hoole Canyon lay the little trading post at Ross River, but few ever came this way. The country was as empty as it was the day he first wandered through it, seeking the fortune that eluded him when his discovery on Gold Bottom in 1896 precipitated the Klondike gold rush.

On this unnamed creek Bob Henderson had held another fortune in his hand but did not know it. Prospecting along it years before, he had come across a strange ore. But he had been more interested in the gold he could pan from the creek bottom. Curiously he had picked up a fragment, examined it and thrown it away. He might never have remembered it had not the discovery of radium-bearing

pitchblende on Great Bear Lake in 1930 stirred the almost forgotten memory. For the unknown ore he had thrown away had been pitchblende.

From the cover of the spruce trees a squirrel chattered angrily in the stillness. Henderson turned to Captain John Irving, his partner on this trip and his friend since they had sailed the Pacific coast together during the days of the Klondike gold rush.

"Yes," he said, "this is where I camped. And somewhere over there is where I found the pitchblende." His outflung arm indicated the darkening hills at the head of the creek. "I figured I could find it again without much trouble, but we can't do any more this trip. We'll have to come back in the spring."

He lapsed into silence, staring into the dusk again. With his craggy face, the big hooked nose and the bold blue eyes under bushy eyebrows, he had something of the look of an eagle about him. The chill wind, already pregnant with the fury of another winter's storms, whipped at his gaunt erect figure and he pulled the collar of his mackinaw closer about his face.

"We'd best be getting back," he said, and turned to go down the creek toward the camp.

Now we sat around the dim lobby of the Caribou Hotel in Carcross, waiting to go "outside" on the next train over the White Pass and Yukon Railway to Skagway. The wild, sketchily mapped country around the Pelly River was only a few hours' flight away but already it seemed far removed from this ghost of what had once been a prosperous mining center. Across the street two men lounging in the late afternoon sun outside the railway station were engaged in desultory conversation with an Indian perched atop a

wagonload of hay he had brought over the grass-grown trail from Tagish. Otherwise the town appeared to be almost deserted now that the northern summer was drawing to a close and the tourists had gone.

Beside me, his faded sombrero pushed back on his head, Bob Henderson leaned forward in the worn leather chair and talked about his plans. He looked tired, but he was as full of enthusiasm as when I first met him a year before in Vancouver and told him that I was going north on an assignment to write on the Yukon.

"Remember what I told you then?" he asked. "I told you to forget all this nonsense about the frozen wastes of the north. The north isn't a barren land, it's just empty, waiting for roads and railroads and people to build the country. And I told you not to spend too much time digging into the past. It's the future that matters."

But I had hardly shared his enthusiasm when, on New Year's Day, 1932, with two other young Canadians also going north for the first time, I had landed on the battered wharf at Skagway. The bitter north wind was shrilling through the pass, sweeping the fine powdered snow from the river ice and driving it in stinging clouds before it. The sea, the sky, the barren hills above the town, all seemed to be cast from the same gray mold. Even the town itself, straggling across the flats, looked bleak and cheerless that day. It conveyed an impression of stagnation and long neglect and I thought I had never seen a more dismal place.

The three of us were the only passengers. Huddled against the fury of the wind, we listened while an official hurriedly explained that the train might not leave for several days. The track was blocked near White Pass and he

could not say when the snowplow would be able to get through to clear it.

When he had gone we looked at each other uncertainly. The idea of waiting in Skagway did not appeal to the others any more than it did to me. We were all impatient to be on our way.

"We could walk over the track to Carcross," I suggested finally.

"In this weather!" exclaimed the fair-haired boy whose name was Jeff Bower.

"There's no other way unless we want to wait for the train," I pointed out.

"How far is it?" Harry Williams, the other boy, asked.

"About seventy miles," I said.

"But what about our baggage?" asked Jeff.

"Well," said Harry, "maybe we can get a sled and haul it."

That afternoon, as the early dusk hid the hills, we were on our way up the White Pass, pulling our baggage behind us on the sled I had obtained after much bargaining from an Indian. Heads down against the wind, feet slithering on the glare ice of the river, we were already wondering what had impelled us to start out on foot when we might have waited for the train in comfort at Skagway.

We passed that night in the mouth of a caved-in mine shaft a few miles from Skagway. The wind had died down and a few stars peered through the breaks in the clouds, but it was bitterly cold and the shaft afforded little shelter. Since we had no sleeping bags, we divided our time between gathering dry wood on the hillside above us and sitting huddled in our blankets around the fire. None of us slept. Toward morning it started to snow, and over a misera-

ble breakfast of pork and beans we debated whether we should turn back. We decided to go on.

Ten days later we walked into the Caribou Hotel and wearily slid our packs from our shoulders. In that short time we had already learned much about the north and the rough kindness of its people. Railroaders, amused and a little alarmed for us because we were such *cheechakos*, went out of their way to help us. At night they found us bunks in their lonely section houses and when we left in the morning they phoned ahead to the next section to tell them we were on our way. They saw we were properly equipped and smiled when we talked about payment. The sled we had abandoned when we were caught high above the river in a blinding storm and had to wade waist deep through drifted snow in the darkness. A track hand found it and promised to put it on the first train that came through. We gained a deep respect for these men who kept this little-known mountain railroad from Skagway to Whitehorse open through the winter. Even though it served only some four thousand people—the entire population of the Yukon Territory at that time—it demonstrated the practicability and importance of railways in the north.

"It's a tough job, but not as tough as it looks," Jim Fraser, the station agent at Carcross, told me. I had first heard of the White Pass and Yukon Railway from him a year earlier when we were fellow passengers crossing the Atlantic from England. "Most of the men have been working on the road for years and the engineers know every one of those grades and just how to take them. The road is the lifeline for this part of the world. Everyone depends on it. Without it Carcross and Whitehorse could not exist."

But others I talked with in Carcross expressed a differ-

ent view. "Sure, it's the only means of transportation," said one old miner, "but that's just the point. Whoever controls transportation up here pretty well controls the country. You've only got to look at this country to see the result."

I was to hear this subject of transportation discussed wherever I went during the next few months. With the increasing use of planes for travel and carrying freight in the north, people were no longer dependent on the few railroads and, in summer, the river steamers, but they were also becoming more conscious of the inadequacy of these means of transportation. Because of the contrast between the new means of travel and the old, they were realizing how much the development of the country was bound up in the development of transportation.

Beyond the narrow limits of the railroads the contrast between travel by plane and by dog team or on foot was even more striking, as I observed for myself when I left Carcross to go to Atlin, a little mining town in northern British Columbia some eighty miles to the south. Traveling the first day by dog team and the rest of the time on foot, it took me five days, one of which I spent storm-bound in a trapper's cabin, to cross over the ice to Atlin. Yet the plane made the same trip in less than an hour. Before the plane service was established Atlin was completely cut off from the world in winter except by the trail across the lakes to Carcross, over which mail was brought by dog team, and the telegraph trail to Telegraph Creek, which was traveled by few except the linesmen. Atlin had a few miles of roads to the mining camps on the creeks; it even had a taxi service, but it had no road linking it with any other town.

That summer, for the first time, there were several planes

stationed at Atlin Lake, servicing outlying creeks, carrying freight and taking miners far out into the hills where it must have taken them many weary weeks packing their supplies over the trails.

It was the same thing when I returned to Carcross and met Bob Henderson again. The trip into the Pelly River country would have taken two or three weeks over the trail. By plane it took two or three hours. It meant that men were no longer confined to the valleys where the rivers were their highways. The plane was opening the entire country to them.

"These planes sure are making a difference to this country," Bob Henderson remarked to me as we sat talking in the Caribou Hotel that October afternoon. "I'm seventy-six now and I guess I'm too old to go packing my stuff through this country the way I used to, but I'm still not too old to fly. When we come back in the spring we'll fly all the way from Vancouver, eh, John?" He turned to Captain Irving, who nodded his agreement.

"It's the only way to travel," he said.

Henderson leaned over and tapped my knee. "You mark my words, the Yukon isn't done," he declared. "It hasn't even been scratched yet. This whole country from the Yukon over to the Mackenzie is mineralized. It's just as rich in minerals as Siberia." He had never been to Siberia, but the Soviet government's tremendous projects for exploiting its mineral wealth had aroused his interest as a miner.

"This country is changing. Some people don't like it. They want to leave things as they are, but they can't hold a country as rich as this one is back forever. I didn't find the pitchblende this trip, but I know it's there and when

we come back in the spring we'll find it. There's hard coal within fifty miles and I know a level pass where a railroad can be built. Then you'll see things change."

Listening to him I felt as I had on many occasions during the past few months when miners and trappers told me of their struggles and their hopes and I found myself being caught up in their enthusiasm and sharing their conviction that this was the country of the future. It was impossible not to reflect his confidence. While he now made his home in Vancouver, living on the pension given him by the Canadian government in recognition of his services and as compensation for the loss of his claims on the Klondike, his whole life was bound up in the north. He lived for the day when he would again make a rich strike. It was a story I had heard from many prospectors, the hope which kept most of them going from disappointment to disappointment.

Crossing the flat swampy country around Little Atlin not long before I returned to Carcross I had stayed overnight with Andy McKinnon in his tent. He too was spurred on by the hope that his copper and gold claims somewhere back in the hills would prove as rich as he believed them to be. Miners who knew him, I found, were apt to smile a little and shake their heads whenever I mentioned the gentle, soft-spoken old prospector. But for Andy McKinnon the proving of his claims was purely a personal matter. It would mean security in his last years, even though he had spent too long in the hills to be happy away from them, and above all else, the satisfaction of having at last made a rich strike. Unlike Bob Henderson, he did not consider what effect his success would have on the country nor did the coming of the plane to the north mean anything to him. He would continue to pack his stuff

over the trail. Could he have known that in a few years heavy trucks would be rolling over the Alaska Highway and transport planes landing on airfields within a few miles of his camp he would probably have been dismayed.

But in one respect Henderson and McKinnon were alike. The change they had seen come over the Yukon in the past thirty years had been one, not of progress but of slow decline, and they could not forget the country as it had been during the years of the gold rush. They were convinced that it could emerge from its long period of stagnation and break through the barriers of neglect only through some rich new discovery which would again bring thousands of people flocking to the north. Despite Henderson's admiration for the way in which mining had been developed in Siberia, the idea of planned development of the Canadian North and Alaska had never occurred to him.

"I've seen men sleeping on the sidewalks of that town," he remarked to me as we stood on the observation platform of the train and watched Carcross dwindle in the distance. "You'd never believe it to look at it now, but I hope I'll live to see it again."

But Bob Henderson had made his last trip to the north. He died in January, 1933, three months after he returned to Vancouver, and with his death a chapter in the development of the north, encompassed within the single span of his lifetime, was closed.

Thirty-nine years before, in 1894, his imagination fired by the stories told by his brother, Captain Henry Henderson, he had left the copper mines of Colorado to go to the Yukon. With two partners named Kendrick and Snider, he made his way from Dyea over the Chilkoot Pass, across Lake Bennett and Lake Laberge and down the Lewes

River to the trading post of Ogilvie on the Yukon River. Discouraged by what they found, Kendrick and Snider went back "outside," but Henderson remained, taking long trips into the wilds and prospecting all over the Klondike watershed. He had a theory that the source of the fine gold prospectors were then washing out of the bars on the Yukon River would be found at the head of the creeks. Two years later, standing on the creek he named Gold Bottom, he knew he had proven his theory.

From the ends of the earth men struggled across the Chilkoot Pass and the White Pass, enduring incredible hardships and paying fantastic prices for transportation over the lakes and down the rivers. Thousands poured into the empty territory and at Bennett, Whitehorse, Dawson City and other points along the trail, cities of tents and shacks arose in the wilderness.

Henderson was not among those who found a fortune on the Klondike. When he made his discovery at Gold Bottom he told another prospector, George Carmac and his Indian partners, Skookum Jim and Cultus Charlie, about it. Presently they came up and started prospecting along Rabbit Creek, later renamed Bonanza. Here they found gold. In their haste to stake they forgot their promise to let Henderson over on Gold Bottom know of any discovery they made and by the time he heard about it the richest ground had been staked.

Finally, when he went down to the government office at Fortymile to record and asked for discovery and location claims on the creek he had named Gold Run in the Klondike River watershed and on Quartz Creek in the Indian River watershed, he found he was too late. Another prospector, Andy Hunker, had staked the discovery claim on Gold Run and renamed the creek after himself. And while

he had been out in the hills a new mining regulation had been made joining the districts of the two watersheds into one. Despite his protest that under the old regulation he was entitled to the claims he had staked but not recorded, he was allowed to stake only one claim on Quartz Creek and even the record of that was lost later when the government office was moved from Fortymile to Dawson City.

Henderson lost a fortune, but his discovery was instrumental in opening up the north. While the rush to the Klondike was at its height, gold was found at Nome in 1899. Soon hundreds were landing on the rich gravel beaches there and their numbers swelled to thousands as men left the Klondike for this new field, making the long trek by dog team over the ice of the Yukon River. After the Nome rush gold was found at Fairbanks in 1902 and a sprawling new mining camp sprung up in the heart of Alaska. All this stemmed from Henderson's initial discovery.

Before that time, the Yukon, like Alaska, was virtually a closed country known to few white men except the fur traders. Around the territory, as around the north as a whole, had grown the legend, inspired by the fur-trading interests to discourage development and settlement, that it was a barren and desolate region. There was little to induce men to go there and none to urge them. The rush to the Klondike and presently to Alaska forced the opening of the country, but not for any lasting development. The White Pass and Yukon Railway and the Alaska Railroad were built. Steamer service was established on the rivers. A few short roads were constructed. But as the richest claims were exhausted and companies operating powerful dredges and employing only hundreds of men took over the ground formerly worked by thousands of individual miners, the country declined and the tide of adventurous

humanity ebbed, leaving its ghost cities and piles of tailings, its deserted cabins by abandoned claims. Presently, not more than a few thousand were left.

Henderson had watched this decline. He saw Whitehorse, which once had a transient population of some twenty thousand, dwindle to a resident population of between three and four hundred, and Dawson City, for a brief time one of the largest cities west of the Rockies, fall from an estimated thirty thousand to between eight and nine hundred population. Gold had been the only industry of these cities. Without industries they could not survive and what transportation facilities there were, while they kept them barely alive, also governed the development of industries. Except for the fur trade and gold and silver mining, and the tourist traffic in summer, none was developed.

Yet the north was already responding to the change brought about by the plane and radio, even though that change had not then led to the tremendous development which is now transforming the face of Alaska, the Yukon and the Northwest Territories.

Henderson had gone on foot in those early years, slashing his way through the brush, living off the country and perhaps never seeing another man for months on end, completely out of touch with the world. Once, while he was prospecting the Klondike, he injured his leg and for two weeks he lay alone at his camp waiting for the wound to heal sufficiently for him to move. He was prospecting in the Pelly River country the winter his wife died and he nearly lost his own life when a fire destroyed his little cabin and all his belongings except a hatchet. Not until he reached the mouth of the Pelly River a week later did he learn that his wife had died "outside."

But now bush flyers were hurdling the mountain barriers in their Fairchilds and Fokkers. They were landing the better equipped prospectors of another generation in the heart of areas where aerial survey had shown formations which might contain the rare minerals needed by modern industry. If a prospector were injured or fell sick, within a short time he was being flown to hospital. The silence was being bridged by radio and men in the wilds no longer were out of touch with their families. Henderson recognized these changes and he was among the first to use the plane to carry him over country he could no longer traverse on foot. And he made his last prospecting trip, not in an attempt to find the gold which had first drawn him to the country but to rediscover the pitchblende ore which once he had considered worthless.

On the changing frontier of the north men were already spending less effort in their search for gold and more in the quest for industrial metals. They were thinking less of making a rich strike and leaving for "outside" to make their homes and more of developing the country as a place to live. And "outside," people who had heard so many stories of hardship and privation in the north that even the most incredible were often accepted as fact were beginning to discover the truth as a result of the agitation for construction of a highway to Alaska. They were finding that even though many of these stories as related by men who went into the north unprepared and ill equipped were true, the conclusions drawn from them were not. Far from being a frozen country incapable of supporting a large population, it was in fact the last great frontier in North America.

Ten years later, in April, 1943, as the United States carry-all I was traveling in pulled to a stop on the Alaska High-

way beside a sign reading "Norman Wells Road," I recalled what Henderson had told me the first time I came north. "The north isn't a barren land, it's just empty, waiting for roads and railroads and people."

Now, northward from Teslin, trucks were grinding over the pioneer road army engineers had already pushed to Ross River over the surveyed route to the Mackenzie River and Norman Wells. At Ross River, above the once isolated trading post and the Indian village on the flats, a road had been carved out of the mountainside with such speed that the Indians had stood and watched openmouthed. As one of them told me afterwards, "One day, no trucks, no road. Everything quiet. Next day, trucks come, road up mountainside. No more quiet." Through the very area Henderson had combed in vain for the lost vein of pitchblende, bulldozers were clearing a path in the bush while behind them another road took shape. The level pass through which he had asserted a railroad could be built was now part of the surveyed route for the projected Canada-Alaska railroad from Prince George to Fairbanks. Army engineers were examining coal deposits for possible development.

Bob Henderson would, I thought, have hailed it as a vindication of his unbounded faith in the future of the country.

Edmonton—Air Metropolis of the Future

Edmonton, as I remember it in other years, was a sprawling city which met the eastbound Canadian National train far out on the prairie at night and escorted it in, street by street, through the fields. A young city, ambitious to be a metropolis, it never had any doubts about its own future. It was content to believe that the years would bring the people to fill in the empty spaces.

The city has not had to wait long to realize its ambitions and now the streets through the fields on its outskirts are fast being built up. In 1905, when it became the capital of the newly created province of Alberta, it was a thriving little town of some fourteen thousand people. In 1939 it had ninety thousand people. Today it has a population swollen by war workers and transients to nearly a hundred and twenty thousand people and a housing problem that becomes the immediate concern of every new arrival in the city.

It became my problem when I stepped off the train into the pale sunlight and bitter cold of an early March morning. The platform was jammed with people. Most of them were American soldiers and Canadian airmen and workers headed for projects along the Alaska Highway. Some would

be staying in the city only a few days, while others might be there for weeks, but all had to find a place to sleep in a city where every hotel was packed and even private homes could not accommodate any more.

I started at the Macdonald Hotel. The clerk just shook his head. "Try the King Edward," he suggested. At the King Edward Hotel the clerk also shook his head. "If I'd had fifty rooms this morning they would all be taken by now," he stated. "You might try the Corona." An hour later I was still trying to get a room. Eventually I found one. The plaster was off the ceiling above a bed which looked as if it might collapse at any time from the sheer effort of supporting so many transients. And although it was a temperance hotel—the notice in the lobby read, "No whistling, singing or other loud noises permitted"—the last occupants had obviously not been abstainers. Nevertheless, it was a room and if I did not like it there were half a dozen others patiently waiting in the lobby who would.

Edmonton has experienced many booms, during the rush to the Klondike and in the hectic years after oil was discovered in the area. It has never known anything like its present sudden expansion as the center of the new developments in the northwest. Since the United States Army and a score of American contractors moved into the city in 1941, office space has been unobtainable. Two big American contractors, Bechtel, Price and Callahan and Metcalf-Hamilton Kansas City Bridge Company, have converted showrooms, garages and basements, even a curling rink and a theater, into offices. The Metcalf-Hamilton Kansas City Bridge Company is using the Empire Theater as its headquarters and draughtsmen preparing the plans for new bridges were working there before the carpenters had finished putting up partitions. The basement of the First

Baptist Church is now an office for Bechtel, Price and Callahan. Northwest Airlines has taken over the former residence of the lieutenant governor of Alberta for its pilots and ground crews. Wooden shacks have been hastily erected on vacant lots in the heart of the city and new warehouses are being constructed. And still there is not enough room.

The crowds that throng Jasper Avenue and 100th Street and scramble to get on streetcars and trolley buses have been swollen by the thousands of Americans employed by the American contractors. The city's life already reflects their influence. It has a new and refreshing informality that was lacking before. Until the Americans came one seldom saw people wearing parkas on the streets of Edmonton. Now half of the men and many of the women wear them. The Americans were the first to appreciate the warmth and comfort of the parkas issued to all American soldiers in the northwest. They found the parka an ideal garment for a city where the temperature sometimes falls to sixty degrees below zero. Soon stenographers began going to work in colorful ski suits and parkas and convention bowed to comfort.

The Americans working in Edmonton have now become familiar with the geography of the northwest, and its great distances no longer amaze them. But it is still a puzzle to the folks back home, many of whom have only a vague idea where Edmonton is and have never heard of such places as Fort Nelson and Carcross. Letters reach the Edmonton post office addressed to individuals at "Edmonton, Alaska." And because the city of Edmonton has become associated with the Alaska Highway, some of them tend to look upon it as another town of shacks and cabins in the wilds, instead of a modern city which has far outgrown its pioneer days.

When American troops first started work on the Alaska Highway a long-distance call from Chicago was put through to Edmonton. The operator wanted a soldier who was then working in one of the camps beyond Fort St. John. She asked the Edmonton operator to have him called to the phone.

"Do you know where Fort St. John is?" the Edmonton girl asked.

"It's near Edmonton, isn't it?"

"It's more than five hundred miles away."

"Well," exclaimed the Chicago operator impatiently, "put the call through and have someone there call him to the phone."

"But there's no line to Fort St. John. A message would have to be radioed there and then a man would have to go on horseback to the camp with it."

The Chicago operator gasped. "But there must be some way to call him to the phone," she declared.

It took four conversations, including a lengthy discussion with the supervisor at Chicago, to convince her that it was impossible to make the call.

Today Edmonton and Fairbanks are connected by a 1,600-mile telephone-teletype line, the most advanced long-line installation in the world and one of the great achievements of the new northwest. It is also a link with American history, with the ambitious project conceived by the Western Union Telegraph Company in 1864 for a telegraph line traversing British Columbia and Alaska, then still a Russian possession, crossing the Bering Strait and spanning Siberia. The line was never completed because in 1866 the Atlantic cable was laid, providing communication between America and Europe. The man who headed the United States-Russian Telegraph Expedition

was Charles S. Bulkley, a colonel of United States Engineers. Copies of Colonel Bulkley's journal and letters have been presented by Brigadier General J. A. O'Connor, head of the Northwest Service Command, to President Franklin D. Roosevelt and Prime Minister Mackenzie King, while other copies have been given to libraries in Alberta, British Columbia and Alaska.

As a trading post on the North Saskatchewan River established in 1795, Edmonton served as a center of the fur trade in the Canadian North. Today it is still the "Gateway to the North," but a north that is being developed beyond the dreams of a few years ago. Few cities face a brighter future. It has coal—in 1942 mines in the Edmonton area produced 514,479 tons of coal. It has oil—the Vermilion area east of Edmonton produced 63,793 barrels of oil in 1942 and now the Athabaska oilfield north of Edmonton is also being developed. It is the main marketing outlet for the rich agricultural areas of northern Alberta. All of these things are important to the people of Edmonton, but none so important as the city's position as a great air center of the future on the Great Circle route.

In May, 1943, this report appeared in the *Edmonton Journal*: *

Tangible evidence of Edmonton's growing importance as one of the chief air centers on the continent, the Department of Transport is planning to make this city the center of air traffic control for roughly 1,000,000 square miles of territory in western Canada and the north.

* Commenting on this report, C. P. Edwards, Canadian deputy minister of transport, stated: "Edmonton will be the key point for the area, but whether the boundaries mentioned will be the ones fixed I cannot say. However, Edmonton will be the center for the stuff on the Alaska route, down the Mackenzie River and west to Prince George."

It was learned that technicians already are at work installing the necessary radio and other equipment which will be used to control the flight of all aircraft, civilian and military, flying in this vast area.

Roughly, the block or strip which will be controlled by Edmonton is as follows: Bounded on the east by a point east of Lethbridge and north to the Arctic Ocean; on the south by the international boundary; on the west by the Pacific Ocean; and on the north by the Arctic Ocean. The northwest corner of the strip would be a point north of Whitehorse, it is suggested.

The block is not square, but it takes in all of the regular flying routes which have been established in Alberta, British Columbia, the Yukon and part of the Northwest Territories.

Similar air traffic control centers have been established in Toronto and Montreal, taking in huge areas, but this is the first one in western Canada and definitely puts Edmonton on the aviation map of the continent.

Behind this report is the story of Edmonton's rapid rise to importance as an air center, a development which was foreshadowed in 1941 when the Canadian government constructed a chain of airfields from Grande Prairie to Whitehorse. Now the city is already witnessing the fulfillment of Vilhjalmur Stefansson's prediction that it would become a junction for international air lines.

When Wendell L. Willkie returned from China in 1942 by way of Nome and Edmonton, flying almost a straight line over the Great Circle route, the attention of Americans and Canadians was drawn to the short northern air routes which in time and space are drawing the cities of Europe and Asia closer to the cities of our own continent and producing a new concept of geography. Edmonton lies athwart these routes.

It is a straight line from Minneapolis, Edmonton, White-

horse and Fairbanks to Nome to Vladivostok and Chungking. Edmonton is on the direct route from San Francisco to Moscow. The air routes from the cities of the eastern United States and Canada to the newly developed regions of the Canadian Northwest and Alaska converge at Edmonton. North of the city lies the great Mackenzie River basin with all its wealth of natural resources. Still farther north, over the polar route blazed by the Soviet flyers, Valeri Chkalov, George Baidukov and Alexander Belyakov, in 1937, is the Soviet Union.

The Arctic Ocean is enclosed by the territories of Canada and the Soviet Union, Alaska and Greenland. In the summer months ships can sail around its perimeter over routes cleared by icebreakers. Railways may eventually be pushed to its shores. Only planes can cross it. In 1917, three years after Lieutenant Nagurskii, a Russian aviator, made the first Arctic flight, around Novaya Zemlya, Vilhjalmur Stefansson urged Sir Robert Borden, then prime minister of Canada, to make an investigation of polar air routes. Time has proved his foresight, for the Arctic has become one of the most important areas for international aviation in the world.

Edmonton feels that its place in the future of international aviation is secure. It is already Canada's most important air center on the route to the Orient and a base for Northwest Airlines, now operating under contract to the United States Army. Civil air routes crossing the international boundary between Canada and the United States have been confined for the duration of the war to those being operated in 1940, but at least two great American air lines, Northwest Airlines and Chicago Southern Airlines, have already filed applications with the Civil Aeronautics Board to establish postwar routes to the Orient through

Edmonton and Fairbanks. The service planned by Chicago Southern Airlines will run from Chicago over the Great Circle route to Singapore and Batavia, a distance of 8,800 nautical miles and 1,540 miles shorter than the route through San Francisco. Edmonton, Whitehorse, Fairbanks and Nome will all be on the new route.

Canada is also investigating the possibilities of the Great Circle route to the Orient.* As early as 1940, Grant McConachie, then president of Yukon Southern Air Transport and now general manager of Canadian Pacific Airlines, announced that his company was negotiating with the Soviet government for an air service from Edmonton to Vladivostok by way of Nome. Canadian Pacific Airlines now has three main routes from Edmonton across the Canadian Arctic and its pilots are gaining a wide experience of northern flying. Today these routes terminate at Dawson City and at Aklavik and Coppermine, both on the shores of the Arctic Ocean. Tomorrow they can be extended across the North Pole.

Edmonton has a prominent place in all these projected routes. Its airport, which in 1928 had only three planes and five employees, had seventy planes when Canada entered the war in 1939. Now it is handling five thousand flights a month and has the facilities to handle twice that number. A new program, announced in June, 1943, calls for the expenditure of \$2,000,000 for the extension of runways and the construction of new hangars.

All of this had its beginnings twenty years ago when a few intrepid bush flyers first spread their wings over the

* Hon. J. A. MacKinnon, Canadian minister of trade and commerce, announced in August, 1943, that surveys were being made from Edmonton down the Mackenzie River with the intention of establishing an all-Canadian air route to the Orient.

north and effected a radical change in the life of its remote settlements.

The pilots on the regular air routes across the northwest are now guided by radio and they can follow the new highways for hundreds of miles. They have fine airfields and emergency landing strips. The planes they fly and the facilities for repairing them are the best that aeronautical engineers can devise.

"Most people seem to think that flying in the north is dangerous and romantic, but anyone who has flown in this country will tell you that it's not much different from flying anywhere else," a pilot flying for Canadian Pacific Airlines told me. "Actually, flying up here is often monotonous and when you consider the amount of traffic there are few serious crashes.

"The trouble is that every time a plane is lost in the north it gets the headlines so that people have come to look upon flying in the north as a risky business all the time. They read about the spectacular flights, but they seldom read anything about the hundreds of routine flights made over the same country. Up here people take flying for granted. It's the quickest way and usually the only way for them to travel. They have naturally become air-minded because air travel plays such a big part in their lives."

The bush pilots who pioneered these northern routes, men like C. H. (Punch) Dickins, Captain W. R. (Wop) May, Walter Gilbert, Leigh Brintnell, Cy Becker and Grant McConachie, whose names have become synonymous with commercial aviation in Canada, had few of the facilities provided today. They used the lakes and rivers for bases and landing fields, as bush pilots still do, and their mechanics made emergency repairs out in the wilds, using whatever material they could find. Sometimes they worked

waist deep in icy water to repair a damaged pontoon or lay flat on their backs in the snow to sew the torn body fabric of their planes. Yet in their early Fokkers, Junkers and Bellancas they flew thousands of miles in the years after 1928, when the first commercial planes began to penetrate the Canadian North.

The first pilot to cross the Arctic Circle in Canada was "Punch" Dickins, who flew a pouch of mail 1,540 miles from Edmonton to Aklavik, at the mouth of the Mackenzie River, in 1929. In the same year, Leigh Brintnell flew Gilbert Labine to Great Bear Lake on the prospecting trip which led, in 1930, to the discovery of radium there. The rush to Great Bear Lake, where four thousand claims were staked in one year, proved the worth of air transportation in the north and gave a new importance to the city of Edmonton. With freight charges of \$1.50 a pound, only essential supplies and equipment were flown to Great Bear Lake, but "Punch" Dickins, Walter Gilbert and other pilots made many flights, despite difficult winter flying conditions and the lack of maps. Dickins and Gilbert had to use sketch maps. Now aerial photographs, taken by the Royal Canadian Air Force in a systematic mapping of the north begun in 1930, serve equally as a guide to pilots and prospectors.

In 1929 the first Arctic mail contract was awarded—an air-mail service to the Arctic was urged in 1925 by Major R. W. Hale, postal superintendent at Edmonton, and "Punch" Dickins—and with the increasing use of planes in the north for carrying passengers, mail and freight, several bush flyers began to form their own companies. Leigh Brintnell launched Mackenzie Air Service, Cy Becker organized Commercial Airways and Grant McConachie

formed Independent Airways, which later became Yukon Southern Air Transport.*

Soon air transportation became the accepted thing. Trappers, prospectors, missionaries, doctors, members of the Royal Canadian Mounted Police and commercial travelers all began to use planes, saving themselves days and weeks of hard travel.

When I made my first flight into the northern bush in 1932 it was in a patched single-motored Bellanca. The only other passenger was a sixty-year-old prospector who was returning to his camp on an isolated creek. The cabin was full of his supplies and it would have taken him many days to pack them over the hills. We had hardly taken off from the lake than we ran into a driving rainstorm. The rough trip did not trouble the old man. With his head on a sack of flour, he slept through it all. His only comment when we landed and woke him up was, "Say, that didn't take no time at all. Guess I was born forty years too soon."

Air transportation brought many innovations to the north, but none stranger than the use of planes to fly whitefish from Peter Pond Lake to Cheecham, on the Northern Alberta Railways, for the Chicago and New York markets. Grant McConachie started this service in the winter of 1932-33. The fish were caught in gillnets strung under the ice. Holes were cut in the ice, the nets passed through and anchored at other holes. Then the nets were picked up by men who went out in cabooses mounted on horse sleighs. After the fish had been gutted and sacked they

* These and succeeding companies have since been incorporated in the Canadian Pacific Airlines system and many of the pioneer bush flyers are now CPA officials.

were flown to Cheecham to be packed in ice and shipped by boxcar. The plane service shortened to less than an hour a haul which took four or five days by horse sleigh.

In the north the plane and the radio have become instruments as useful in the saving of lives as the surgeon's knife and the doctor's serum. Bush flyers have risked their own lives to make these "mercy" flights, as Grant McConachie once did when he went to the assistance of two trappers on a lonely lake. The trappers, both badly burned in a gas explosion, sent a radio appeal for help. But the ice on the lake was only two inches thick. Skis would break through the ice and pontoons would be smashed. It seemed impossible to reach the two men by air. Yet their burns were serious and they had to be taken to hospital at once. McConachie determined to make the effort. He and his mechanic flew to the lake in an old Fokker fitted with wheels. While he circled the lake he studied the beach. It was tree-lined and rocky. It seemed as though any plane attempting to land in the narrow space between the lake ice and the trees must certainly crash or, if by a miracle it got down safely, be unable to take off again. McConachie landed with one wheel on the ice and the other on the beach, the fuselage of his plane ripped by the branch of a tree. While his mechanic sewed up the torn fuselage with fish gut, McConachie helped the trappers into the plane. Then he faced the shortest take-off he had ever attempted. The nose of the plane lifted and the wheels almost brushed the tops of the trees, but they were clear.

J. K. (Bud) Potter is typical of these northern flyers. His name, perhaps, is not so well known outside the north as some others, but he barnstormed with Grant McConachie

in 1932-33 and has flown nearly every air-mail run in the Canadian Northwest, to Yellowknife, Goldfields, Aklavik and Whitehorse.

He first started flying in 1929 when he was twenty. He was working as a truck driver for an Edmonton biscuit company, on occasions filling in as warehouse clerk and shipper too. Sometimes his work kept him until two o'clock in the morning. But he wanted to fly. He joined the Edmonton Aero Club, paying for his tuition out of his wages of twenty dollars a week and taking his training on evenings and week ends whenever he had the chance. It cost him fifteen dollars an hour, and half that when he could fly solo. After he had ten hours solo flying time he obtained his private license, but it took him several months to accumulate twenty-five hours solo flying time and qualify to carry passengers. By carrying passengers he built up his flying time to fifty hours to get his commercial license and finally he had one hundred hours to his credit and could carry passengers for hire. Then he went barnstorming.

In 1937 he began flying for the Consolidated Mining and Smelting Company and used to act as pilot for Bill MacDonald, the engineer in charge of exploration for the company in the Northwest Territories. When they were out on a flight and saw a promising spot, they landed and MacDonald examined the ground. If it seemed worthwhile, a couple of prospectors were then flown in.

"We always took prospectors out in couples for obvious reasons," Potter, a quiet, full-faced young man with thinning hair, who takes an intense interest in flying and everything pertaining to aviation, told me. "First, I took in one man and his personal equipment. Then I either flew in the other man and his personal equipment and after that the

rest of the equipment, making three trips of it, or a bigger plane took in the other man and all the equipment. It depended on the time the men were intending to stay.

"If I got into difficulties I landed on the nearest lake and made my own emergency repairs. I carried a portable emergency radio set, but in any case the base knew my destination and if I did not return within a reasonable length of time, a second plane was sent out to look for me.

"The prospectors also carried receiving sets to which they listened at set hours for company broadcasts. Each party knew the location of other parties and they often trekked across country to compare notes with the parties closest to them. I returned in the plane twice a week, and more often, of course, if they made a strike, because then the men needed additional supplies and samples had to be flown out."

Potter never had much difficulty finding his parties. Sometimes he used to find a note tacked to a tree saying that they had moved on to another lake a few miles away and sometimes, in the fall, when tents were pitched among yellowing birch trees, they would be hard to spot, but he came to look upon it as routine flying. Even in an area which is dotted with innumerable small lakes he always managed to find the lake where he had left his men.

Flying a regular air-mail run, he found, was a different kind of routine. Like the conductor of a local train, he came to know everyone on his run.

"You soon get to know all the people," he said. "You run personal errands for most of them at one time or another. I've bought everything from roses to canaries for people in the settlements along my runs. Once I even carried goldfish—in a jam pail with holes punched in the cover. They were for a storekeeper's wife at Fort Vermilion.

Her own goldfish had died and she wanted to replace them. Another time I carried a cage of wildcats and, believe me, I wasn't sorry when that trip ended. You carry such an assortment of things that after a while it becomes commonplace."

In June, 1942, Potter made the first survey flight over the country through which the oil pipeline from Norman Wells to Whitehorse was to run. The flight was made under contract to Bechtel, Price and Callahan, the Canol Project contractors. From Edmonton he flew to Fort Norman and from there he took a compass course across the mountains to Sheldon Lake and Whitehorse, exploring the various passes. Afterwards the area was photographed by the United States Army Air Force.

"On this flight I took along an old Indian guide from Fort Norman who had made a trip into the Keele River district and knew the country pretty well," Potter explained to me. "I also took along a younger Indian to act as interpreter and assistant guide. But as we flew across the mountains they kept pointing, first this way and then that, and the more I dodged around clouds the more vague they became. Finally they got together and, after much head scratching, admitted that they didn't know where they were. They knew the country, all right, but they were out of their element. And anyway, I think they were more interested in looking for mountain sheep than mountain passes."

When I saw Potter at Edmonton he had recently been transferred from the Mackenzie to the Yukon division of Canadian Pacific Airlines to go on the regular air-mail run from Edmonton to Whitehorse. But in July, 1943, some time after I had left Edmonton, I came across this dispatch in Canadian newspapers:

J. K. Potter and North Sawle, Canadian Pacific Airlines pilots, flying a regular passenger plane, have just completed a record trip from Edmonton to Fort Norman, N.W.T., and return, a distance of 2,310 miles. The flyers completed the round trip in ten hours and twenty minutes, flying an average of about 225 miles an hour. The regular time for the round trip is about eighteen hours.

It was this spirit, the striving to set new records and accomplish what many thought to be the impossible, that built the Alaska Highway and today is opening up an entire new frontier of opportunity for Americans and Canadians tomorrow.

Oil from Sand

Bill Hartridge, the refinery operator at Abasands, picked up a lump of the congealed black sand and handed it to me. "Look at that," he said. "It's full of oil. And there are ten thousand square miles of it, perhaps twice as much, with enough oil to supply the whole world for the next hundred years. The possibilities are unlimited."

I squeezed the lump of sand and it crumbled in my hand.

"Each grain of sand is coated with a film of oil and it's the oil which holds it together. Our problem has been to find the best method of separating the oil from the sand. We've been experimenting for years but we've licked the problem at last, as you'll see for yourself presently," Hartridge explained as we walked across the open pit. I noticed the oil oozing over the melting ice at one end of the pit.

We made our way through the camp to the banks of the Horse River. Here, kicking the snow off a pile of tailings, he scooped up a handful of fine white sand and let it trickle through his fingers. It was very different from the black sand I had examined a few minutes before.

"This is what it looks like after it has been run through the plant," he said. "Only a fraction of one percent of the oil is left in it. We're having it tested now for glass making. It's a good grade of silica, although it contains too many impurities for making anything except bottle glass."

In the cliff face across the frozen river a layer of the black sand many feet thick was exposed and I asked if it were like this throughout the whole area.

"In some places," he replied. "Around here the sands are fairly close to the surface and easy to work. In other places the overburden is too heavy for them to be worked economically, although we are certainly not worrying about that yet. You can see the sands exposed here and there in the cliffs for about a hundred miles along the Athabaska River and along the smaller rivers like this flowing into it.

"It's an oil man's dream," he added, "but it has taken a long time to make that dream come true."

The Athabaska oil sands in northern Alberta, some three hundred miles to the north of Edmonton, have been described as one of the geological wonders of the world. And until Japan entered the war they remained little more than that. There are similar small deposits in western Utah but their few square miles cannot compare with the tremendous area of those along the Athabaska, variously estimated at between ten and thirty thousand square miles. In these sands, washed onto the limestone bed of an ancient shallow sea where in some prehistoric period they became saturated with oil, is the greatest known reservoir of oil in the world.

Although they have been known for the past hundred and fifty years—in 1788 Peter Pond, the fur trader who established Fort Athabaska, found the Indians caulking their canoes with a mixture of the oil, which they stewed out of the exposed sand deposits along the rivers, and spruce pitch—for more than a century no effort was made to exploit them.

The first man to appreciate their potential importance

was Dr. S. C. Ells of the Canadian Department of Mines and Resources, who in 1913 commenced the study which was to earn him recognition as the foremost authority on the oil sands. He made a thorough survey of the sands, mapping the area, examining outcrops, digging shafts and drilling holes, and analyzing the hundreds of samples he took. He concluded that the sands held at least 100 billion barrels of oil. A later estimation made by C. P. Bowie of the United States Bureau of Mines, based on the maximum estimated extent of the sands, set an even higher figure of 250 billion barrels.

Dr. Ells, still pursuing his study of the sands in the field and in the laboratory, set out to convince oil engineers and promoters in Canada and the United States that they were neglecting the largest untapped source of oil in the world.

He experimented with the sands as a paving material and in 1915 one of Edmonton's main streets was paved with oil sands mined and laid under his supervision. It stood up so well that he used the oil sands to pave a 3-mile road in Jasper national park in 1926. In the same year the Canadian government established four reservations totaling more than two thousand acres in the oil sands to be used for supplying paving materials for roads in national parks. Meanwhile, Thomas Draper, a contractor, was quarrying the oil sands near Waterways, Alberta, and using them to pave roads and sidewalks at various places in the prairie provinces. It was a wasteful method of using the oil sands without first recovering the gasoline, tractor and diesel fuel in them, but it helped to demonstrate their unrivaled asphaltic properties.

As Dr. Ells's findings became known, interest in the oil sands was aroused. In 1922, the Research Council of Alberta began a study of them under the direction of Dr.

K. A. Clark, who conducted laboratory tests for several years and, in 1930, built a 25-ton pilot plant on the Clearwater River near Waterways to assist his work. In 1923 the International Bitumen Company * started operations and later built a small plant on the Athabaska River about fifty-five miles north of Fort McMurray. Although between 1937 and 1938 it produced a few thousand barrels of fuel oil and a quantity of asphalt and then discontinued operations, at the time the company was formed the main problem was still to be solved in the laboratory. Until an efficient method of separating the oil from the sand could be found commercial production was impossible.

The theory that the oil in the sands was only the residue left after evaporation of the lighter constituents of a normal oil had already been disproved by research workers. They had shown that the oil was in fact a heavy virgin oil little advanced beyond the asphalt stage because it had never been subjected to tremendous pressures in the earth. Having proved that virtually every kind of oil product, gasoline, tractor and diesel fuel, crude oil, asphalt and coke, could be obtained, they now had to devise a means of stripping the sands of their wealth.

These sands posed other problems which oil engineers had never encountered before. When they drilled wells they found the viscous oil would not flow into them. The sands had to be mined, but even mining presented difficulties. Over the great extent of the area where they were buried beneath hundreds of feet of shale, sandstone and glacial drift the cost of sinking shafts would be prohibitive.

*In June, 1943, L. R. Champion of Montreal announced the formation of Oil Sands Limited to acquire the holdings and patents of the International Bitumen Company Limited. He stated that the Bitumount plant, with a capacity of 320 barrels a day, would be reopened.

Where they were exposed along the river valleys they could be mined by tunneling, but the tunnels would have to be heavily timbered along their whole length to prevent them from caving in. Jetting with steam or water, when engineers tried it, failed to move the sand. They found that the only practicable method was open pit mining, and this was possible only where the overburden was light, not more than a cubic yard for every ton of sand to be mined. Even though the area suitable for open pit mining was restricted to between ten and twenty square miles they estimated that it contained from 500 million to one billion barrels of oil.

In the laboratory, research workers also faced their difficulties in trying to separate the oil from the abrasive sand which ruined tools and machinery. The oil could be distilled, but it was a costly method and wasteful. After the sand, only 15 to 25 percent of which was oil and the rest silica, had been heated to the high temperatures required for distillation, some of the oil was left in the sand in the form of carbon and the asphalt in the oil was spoilt. The oil could also be dissolved out of the sand with naphtha or kerosene, but too much of the solvent was lost in the process for this method to be economical.

Among those engaged in research work on this problem was an American hydrometallurgist named James Mason McClave. Born at East Springfield, Ohio, in 1867, McClave was fifty-one years old before he turned his attention to oil sands and sixty-three before he made his first trip to the Athabaska area. There in 1936, on what is now the site of Abasands, his years of quiet work culminated in the erection of a separation plant embodying the principles of the quiet zone flotation cell process he had developed. It was only a small plant with a capacity of 250 tons a day, but it

was the first commercially successful method of extracting the oil from the sand.

"When I organized the Western Research Corporation in 1918 we were not much interested in oil sands," McClave told me when I saw him in Edmonton on my way to Fort McMurray. "There was a big oil boom in Colorado and Utah and we were working on shale samples. Occasionally we received samples of oil sands from western Utah where there were several small deposits. I did not do much work on them when they first came in, but presently we began to receive samples from men interested in developing the Athabaska sands and I became interested myself. I studied all the information I could get on them and began to experiment with methods of separating the oil from the sand.

"I tried out various chemical reagents, but none of them worked. Then I tried bentonite, which is a gelatinous clay extensively used in oil-well drilling to keep out water. I found that, being soapy, it did a remarkable job of freeing the oil.

"I had read Dr. Ells's reports on the Athabaska sands, so I decided to get in touch with him and we began what presently became a voluminous correspondence.

"Then, one day in 1925, I received a wire from Dr. Ells stating his intention of stopping over for a few hours in Denver on his way to Texas. He wanted to see the experimental work I had done on the oil sands.

"In the morning he arrived and in his usual direct bluff manner declared, 'Now I don't want you to tell me what you're doing. I want to see it.' With that he went into the laboratory and when he saw the clean sand left after the oil had been taken from it he knew I had something. 'This thing is too interesting for me to go into now,' he said. 'I'll

have to go into it thoroughly when I get back.' But I knew he would be gone six months or more and I did not want to wait after all the work I had put into it. I insisted on his staying. Finally, he took off his coat and went to work. He admitted that he was intrigued by the thought that perhaps I had the answer to the problem he had been studying so long.

"He had intended staying only a few hours. Instead of that he remained five days, working on my process and making adjustments and suggesting improvements. When he had finished his examination he urged me to leave for Canada immediately, become a Canadian citizen, establish myself in a laboratory and devote all my time to perfecting my process. But I was not prepared at that time to give up my own laboratories to do this.

"Eventually we agreed that I should continue my work on the process while he tried to interest people in the development of the oil sands. He did try to form a company but nothing came of it. Those who were interested either were hesitant about spending the money required to build an experimental plant or could not raise it, and others who might have put up the money were not interested in seeing the sands developed for commercial production. However, I continued my work, discussing it with Dr. Ells through correspondence, because I felt that sooner or later the opportunity would arise to put it to use.

"One of those most interested in my experiment was Max Ball, a petroleum engineer in Denver whom I had known for about ten years. In 1930 we visited the Athabaska oil sands together and he was so impressed with their possibilities that he decided to go ahead with plans to form a company. He obtained mining rights to forty-two hundred acres in the oil sands and organized Canadian

Northern Oil Sands Products Limited. This was changed to Abasand Oils Limited in 1935. I was appointed chief engineer for the company in 1933 and I held this position until 1939, when I became consulting engineer.

"From 1932 to 1939, it was mainly a question of developing the separation process and designing new machinery to fit the needs. In many ways it was a unique undertaking and we were constantly coming up against new problems as we expanded the scope of our work. During this time I was working out my quiet zone flotation cell process, which proved far more efficient than the bentonite process I first developed. While both the quiet zone flotation cell and the bentonite processes extracted approximately the same percentage of oil, the quiet zone flotation cell reduced operating costs considerably and made commercial production more practicable.

"The first pilot separation plant we built at Denver in 1932 had a capacity of one ton a day. In 1934 we moved it to Toronto and in 1936, when we had proved the efficiency of the new method to our own satisfaction, we built the larger plant at Abasands and erected a refinery there.

"Actually, most of our work has been experimental, although we have produced commercially on a small scale. We have not yet developed a great oil industry in what most people still regard as the north in spite of the fact that the oil sands are only three hundred miles from Edmonton. What we have done is to overcome the technical obstacles to developing that industry. We have proved that it is not a dream but a practical undertaking, as you will see for yourself when you go to Abasands."

Abasands lies between Waterways and Fort McMurray. By plane it is only a short hop from Edmonton to Fort Mc-

Murray, the first stage of the long flight down the Mackenzie River. By train over the Northern Alberta Railways line to the end of steel at Waterways, three miles by road from Fort McMurray, it is at least a full day's journey.

The Northern Alberta Railways, which is jointly owned and operated by the Canadian National and Canadian Pacific Railways, has about a thousand miles of track linking the pioneer towns and settlements north of Edmonton, where there are few roads. One line runs northwest from Edmonton to Dawson Creek in British Columbia, the southern end of the Alaska Highway, with a branch line terminating at Hines Creek in Alberta. The other line goes to Waterways, 283 miles northeast of Edmonton, to which it was extended in 1923. Started in 1914, it was originally built as a colonizing railroad, a fact which is obvious from most of its rolling stock. It lacks the steep mountain grades of other railroads in the northwest, the White Pass and Yukon Railway and the Alaska Railroad, but its undulating roadbed, which is laid much of the way over muskeg, does not permit of speed. And like these other railroads, it operates on an elastic schedule which provides no guarantee of when it will arrive except that eventually it will get there.

When I went to Abasands in March, plane reservations had to be made far ahead of time. I found it almost as difficult to get a berth on the weekly train.

A year earlier I would have found the "Mixed Muskeg," as it is known up and down the line, still operating with farmers and a few businessmen as its only passengers. Now, as it stood in the Canadian National Railways station, it presented a different sight. The familiar blue wooden coaches with their stacks were the same, but every seat in them was occupied. There were some soldiers, half a dozen businessmen and a few farmers, some with their

wives and children, bound for points between Edmonton and Lac La Biche where the farm country straggles off into the bush. But the majority of the passengers were men going north to work on various projects, most of them Americans. Among them were several pilots from the Mississippi and the Missouri rivers returning to a second summer's work on the Mackenzie and a gang of welders from the shipyards at Leavenworth, Kansas, going to the shipyards at Waterways.

I looked at my watch. True to its leisurely tradition, the train was already an hour late in leaving. The conductor had hopefully called "All aboard" twice and nothing had happened. Each time the passengers pacing the platform clambered dubiously on the train and presently got off again to resume their pacing. In the next car, where passengers sat huddled in their coats, workmen were tearing up the boards to fix the heating system, although in our car it was so oppressively hot that men sat around in their shirtsleeves.

"This is nothing," commented the man sitting opposite me, who told me he was a storekeeper at Waterways. "Why, when I made my first trip up here it took us five days to get to Waterways. These cars are old," he indicated the stained-glass window lights and the oil lamps, "but at least they've been fixed up. In those days we rode in cramped highback wooden seats with our knees touching. There was no schedule because the road was supposed to be still under construction and the train stopped every few miles. We used to claim the conductor ran a trapline along the track."

The man in the corner seat looked up interestedly.

"On my first trip up here in 1931 I woke up in the morning to find the train stopped and the car deserted," he said.

"I walked the whole length of the train and I couldn't find anyone. Even the engineer and fireman were gone. I couldn't understand it. After a while a man came along the track. 'What's happened? Where's everyone gone?' I asked him. The man pointed across the fields and said, 'Oh, they're all over there picking blueberries. We'll have blueberry pie for lunch.' And sure enough, when I walked over I found the train crew and all the passengers in the middle of the biggest blueberry patch you ever saw."

From the platform the conductor called "All aboard" for the third time and surprisingly enough the train jerked into motion. The porter came through the train grinning. "We're on our way, folks," he announced. "The right day of the week, too," remarked the man in the corner seat.

We did not go far. At Dunvegan, just outside Edmonton, we stopped to pick up a long string of freight cars loaded with bulldozers, tractors and other equipment. On one of the flatcars was a section of a steel barge.

"Hell," exclaimed one of the welders as though he had just recognized an old friend, "that's the last section of number two. It left Leavenworth seven weeks ago."

From Dunvegan we jolted through miles of farm country, interspersed with stretches of bush as we left Edmonton behind, to Lac La Biche. The train made innumerable stops and every so often it would hit a rough spot and gather itself up with a bound as if intent on leaping the track. This complicated the serving of meals in the confined space of what appeared to be an old converted sleeper and made eating difficult. But the local passengers accepted it as a matter of course and the waitresses just as casually wiped spilled soup and coffee from the linoleum-covered tables.

Later the two waitresses came around selling raffle tick-

ets at ten cents each. They were raffling an embroidered silk pillow case which none of us expected to have any use for, but everyone bought tickets and the welders took all that remained unsold. As far as I could make out, it was the customary, if somewhat unorthodox, way of collecting tips.

When they were not playing poker, the welders spent most of their time talking with the river pilots and with anyone who could tell them about the country.

"Is it all like this?" one of them asked as we passed through a long flat stretch of bush. "I expected to see mountains." Another wanted to know what it was like in the summer and one of the river pilots told him about the flies and mosquitoes. He turned to me dubiously after a while. "I don't think I'm going to like this at all," he said. What concerned them most was whether they would be able to take a bath, but even after they had been assured of this they looked doubtful.

At Lac La Biche, the largest community between Edmonton and Waterways, we stopped for two hours. Although it was late at night when we pulled in, immediately the train was besieged by children clamoring for what remained of the newsie's stock of candy and chewing gum.

"It's pretty hard for them to get candy up here these days," Len, the genial negro porter, remarked to me. "They're always looking for it when we come in."

In a sense, Len Williams has become well-nigh as important to the people living along the line as the railroad that employs him. He homesteaded at Boyle in 1912 when it still took eight days to travel by horse or oxcart from Edmonton to Athabaska, at that time the head of the navigation on the Mackenzie River. Oil had been discovered at

Athabaska and the town was booming. The boom was short-lived however, and when the railroad was built and Waterways became the head of navigation, he took his present job. Now, after seventeen years, he knows all the people along the line and at one time or another has done personal errands for most of them.

"This trip I picked up a washing machine for some folks at McMurray. They sent me a wire telling me where to get it," he told me. "Yes, and I had to pick up a baby buggy for some other folks at Waterways. Boy, I get all kinds of errands for the folks up here. I pay their insurance for them. I buy their clothes and groceries. I get their licenses for them—all kinds of licenses. Talk about your personal shoppers. I got them all beat."

When we reached Waterways at noon the next day, having taken twenty-five hours to cover the 283 miles from Edmonton, it was snowing. In another two months the town would be bustling with activity as the northern waterways opened up, but it was quiet now and few people were around. The welders piled their baggage into one of the trucks parked by the station and stood watching the dog team waiting restlessly in the snow nearby. It was the first any of them had seen. "It's kinda strange to see this," one of them shouted across to me, and in this changing northwest with its spreading network of roads it did seem strange.

While Waterways looks to a future in which it will be the center of a great oil industry, it is also building up a salt industry from the large beds of rock salt, estimated to contain reserves of thirty million tons, underlying the town and the surrounding area. The salt beds were discovered while the Northern Alberta Exploration Company was drilling for oil in the district between 1907 and 1912, but

no attempt to develop them commercially was made until 1924. Then the Alberta Salt Company Limited erected a grainer plant and during the next few years produced a few thousand tons of salt, closing down the plant in 1927 because of high transportation costs and the refusal of the railroad to put in a siding.

"Most people in Alberta know about the salt industry here because they use Fort McMurray salt every day, but outside of this province it is hardly known at all," Burt Ayres, the plant manager for Industrial Minerals Limited, a subsidiary of Dominion Tar and Chemical Company Limited, told me when I went around the plant with him. "We started operations in 1938 and since 1940 we have more than doubled our output. In 1942 our production was over twenty-two thousand tons and we are now stepping it up from seventy-five to a hundred tons a day."

From Waterways it is only three miles to Fort McMurray by road, now dotted with new buildings. The shipyards, on what is known locally as the Prairie, a level area on the banks of the Clearwater River, lie between the two towns. Here men were working on the big steel flat-bottomed barges, which are shipped from Leavenworth in sections and assembled and welded at Waterways for use on the northern waterways. Here also I saw some of the welders with whom I had traveled on the train. They had found that there were showers at the camp.

"Man," declared one of them, "this ain't so bad. Maybe, we'll like it here after all."

"It sure is strange though to be working on these barges up here," added another. "We helped to build them at Leavenworth and now we've come clear across the continent to finish the job. But, if it's helping to win the war, it isn't too far."

If Waterways had appeared quiet, Fort McMurray was even quieter. There was no one about on the main street, which started impressively with the town's one hotel, the post office and a few stores on one side, some more stores and the bank on the other, and then slipped unostentatiously into the bush with its shacks. A few doors down from the New Franklin Hotel a jeep stood outside a café where some American soldiers sat at the counter kidding with the half-breed waitress. In the hotel three miners sat around waiting for the plane to Fort Smith. Only on the ice of the Clearwater River where mechanics worked on a couple of ski planes was there any activity.

"Don't let it fool you," said Lorne O'Coffey, whose parents run the hotel, when I commented on it. "Before long we'll be turning people away here like we did last summer, especially if there are any big developments in the oil sands."

I rode out to Abasands, between two and three miles from Fort McMurray, in the truck when it came in to take the schoolchildren back to the camp, and as we came down the steep hill above the cluster of camp buildings in the Horse River valley the driver pointed out the seams of black sand in the bank by the roadside.

"It's going to make a lot of difference to all of us up here if the government decides to go ahead," he declared. "It will be the making of this part of the country."

John Malo, the camp superintendent, said the same thing when I met him.

"We're not running the plant right now," he stated. "We're waiting to see what the government is going to do. Last year the government appropriated \$200,000 for the Consolidated Mining and Smelting Company to make a survey here. Now we're waiting to see the report Consoli-

dated made to the government. We know we've got something here, but if things don't go ahead this year a lot of men won't stay. They're just sticking around right now because they all feel a personal interest, but they won't go on hopes forever."

A conversation I had with some of the men in the cook-house later confirmed their intense interest in the development of the sands.

"Sure, most of us could make better money on some of these other jobs," one of them said, "but we want to see this thing through. Otherwise we wouldn't have stuck around last summer. Why, the lowest-paid man on the Consolidated crew got more than the highest-paid man here."

Going over the plant with John Malo, I found it hard to believe that each step in this seemingly simple process of mining the sand and extracting the oil from it represented years of research work.

"To mine the sand we now drill holes with steam jets and then blast it with dynamite to break it up," Malo explained to me as we stood on the bank above the open pit, one side of which was piled high with massive chunks of the black sand. "We used what is known as a shale planer for some time, but we abandoned it because the sand wore out even the finest steel cutting tools we could get. Then, after we have mined the sand it's trucked to this conveyor, which carries it to the pulper." He showed me a scraper device to smooth out the sand picked up by the conveyor and said casually, "That's one of my improvements."

We went inside the plant and examined the pulper, a 20-foot revolving steel cylinder coated, like the rest of the machinery, with thick black oil.

"The sand is mixed with hot water in this cylinder," he

stated. "Inside it is a series of partitions, plates and coils arranged so that they break the oil film away from the sand and spread the oil evenly through the pulp of sand and water. Anything else in the sand is screened out.

"Next the pulp goes into the quiet zone flotation cell." He pointed out what looked like a big inclined trough. "This is filled with water, and as the sand enters at the lower end and is stirred by the spiral conveyor which carries it through the cell and discharges it at the upper end, air bubbles float the oil to the quiet surface of the water. That's why we call it the quiet zone flotation cell.

"After the oil froth has been skimmed off it's diluted with an equal amount of naphtha, which is recovered at the refinery, and then put through the oil settler. The sand and water still left in the oil settle to the bottom and the oil is ready for the refinery. To make sure we extract as much of the oil as possible, the sand discharged from the quiet zone flotation cell is run through a second cell before it goes to the tailings pile and the sand precipitated from the diluted oil goes back into the pulper."

He handed me a rag to wipe the oil from my hands. "Nothing very complicated about that, is there?" he remarked. "Actually the principle is simple, but it took a lot of working out."

At the refinery I found Bill Hartridge filling a drum with gas.

"I hope they'll be using this gas along the Alaska Highway one of these days," he declared. "There's about a barrel of oil in every ton of sand around here and we can get a gas yield of anywhere from thirty-five to forty-five percent from it. We can turn out gas, fuel oils, asphalt, in fact everything but motor oil. This oil is no good for that. Right now we convert our asphalt into coke and use it in

the boiler plant, but if we were producing on a commercial scale and had the storage facilities to keep it warm until it was loaded, we could supply all the asphalt needed for the new roads. Not only that, but this oil contains butadiene which can be used for manufacturing synthetic rubber. All we're waiting for now is the green light to show what we can do."

By the time I returned to Edmonton the company had been informed that the Canadian government, acting on the report submitted by the Consolidated Mining and Smelting Company, had made an initial appropriation of \$500,000 to rehabilitate the Abasands plant, which was to be operated by the company on behalf of the government. Even though the plant would only have an expected production of six hundred barrels a day, it was still a long step toward the goal of ten thousand barrels a day.

The report itself upheld the long years of experimental work done by McClave in consultation with Dr. Ells in one comprehensive sentence:

We are of the opinion that the process of Abasand Oils Limited for separating the bitumen from the sands is a practical one, which could be used in a large-scale plant and which would yield reasonable results.

But in its conclusion there was this contradiction:

While there have been many reports from geologists reporting upon the deposit, none of these reports provided any solution for the extraction of the bitumen from the sands and the removal of the sulphur content necessary to make a product of quality.

While certain of these geologists have been associated with large oil companies, they do not appear to have been success-

ful in interesting their principals or associates in a solution of the problem.

There is no more aggressive body of men in industry than those directing the large oil companies; they have explored all likely areas in the world to obtain supplies of this precious product, oil, and it is significant to note that they have turned away from these sands rather than undertake the solution of the many problems incident to the development of the same and the production of products equal in quality which can be sold at competitive prices with the same products elsewhere.

It might better have stated that the Athabaska oil sands have not been developed until now because the large oil companies had no wish to bring this potentially vast new field into competitive production rather than attribute the neglect to difficulties which a few persistent men have shown can be overcome. This was the view I heard expressed everywhere in northern Alberta and certainly the one borne out by the facts.

Arctic Oil Industry

"What does Canol mean?" the thin-faced little mechanic from Chicago asked me as we came out of the Canadian National Railways station in Edmonton and saw the khaki trucks neatly lettered "Canol" parked nearby. It was a question almost anyone between Edmonton and Fairbanks could have answered, for the Canol Project—an abbreviation of Canadian Oil—is familiar throughout the northwest. It is the Norman Wells oilfield, the new highways and the pipeline stretching hundreds of miles through the wilds, the fleet of steamers and barges on the Mackenzie River and the cars and trucks one sees everywhere. It is the project upon which the planes and trucks in the northwest are increasingly dependent for fuel.

I saw Canol cars and trucks on the streets of Edmonton. I saw them again at Waterways and Dawson Creek and Fort Simpson. I passed them carrying their loads of pipe over the Alaska Highway to Whitehorse and to Fairbanks, twenty-five hundred miles from Waterways. And seeing them at such widely separated points, I was better able to grasp the tremendous scope of the oil development which as an undertaking rivals the Alaska Highway.

Yet, after the highway, the pipeline at first seems unimpressive. It must be seen from the air, extending endlessly across mountain and forest like a gigantic earthworm, be-

fore its magnitude becomes apparent. I saw construction crews at work on one of the smaller branches of the pipeline. Here and there wisps of red dangling from stakes, stumps, the upturned roots of trees, anywhere they would catch the eye, marked the route. Bulldozers smashed and tore at the forest, the great steel blades toppling trees and thrusting them aside. In the cleared space behind them men were laying the pipeline. After all I had heard about it, I was disappointed by what I saw. Then I looked ahead to where the bulldozers were clearing the path through the tangle of stumps and roots and remembered what this country had been like the last time I saw it. The cheerful bald-headed man on the construction crew who spoke to me might have been reading my thoughts. "Sure don't look like much, does it?" he remarked. "But it's going to make a big difference." It already had made a big difference.

That difference is even more marked at Norman Wells, the new oilfield being developed in the Mackenzie District, seventy-five miles south of the Arctic Circle. Until 1932 anyone going there, curious to see the discovery well brought in by Imperial Oil in 1920, would have found the workshops and bunkhouses deserted, the bush steadily encroaching on the clearing around the capped well. Today the expanding oilfield is pushing back the bush. New oil structures rise amid the trees that cover the flat stretch from the Mackenzie River to the hills behind the growing oil town of Norman Wells. Oil-storage tanks on the river bank stand out squat and bright against the green background. There are roads where there were no roads before.

It is a boom district, but the boom is unlike the one that brought hundreds of men down the Mackenzie River twenty years ago. Men are again searching for oil in the

area and they are finding it. When the Canol Project was begun there were four producing wells. In November, 1943, when the Canadian government revealed hitherto secret information, of twenty-six new wells drilled, twenty-three were producing. In both extent and output the field is exceeding even the most optimistic expectations.

Work on the Canol Project began in June, 1942, when recommendations made by the Canada-United States Permanent Joint Defense Board were acted upon—recommendations destined to have a profound effect, not only upon the course of the war but upon the future development of Alaska and the Canadian Northwest. The strategic importance of Alaska had become evident. Dependent upon vulnerable sea lines of supply, Alaska was threatened by the Japanese and with it the entire Pacific coast of Canada and the United States. The immediate military problem was one of constructing supply routes through Canada to link up the chain of airfields already built in northern British Columbia and the Yukon by the Canadian government and to ensure an uninterrupted flow of materials from the great industrial centers of the United States. So construction of the Alaska Highway from Dawson Creek, B.C., to Fairbanks, Alaska, was begun.

But this was only part of the problem. Tractors had to be supplied with fuel, and trucks needed gas, thousands of gallons of it. All of it had to be brought over long supply lines and some of it by sea routes exposed to attack by Japanese submarines. If the known oil resources of the northwest could be developed and new oil reserves tapped in hitherto unprospected areas, the strain on both existing supplies and the lines over which they must be brought

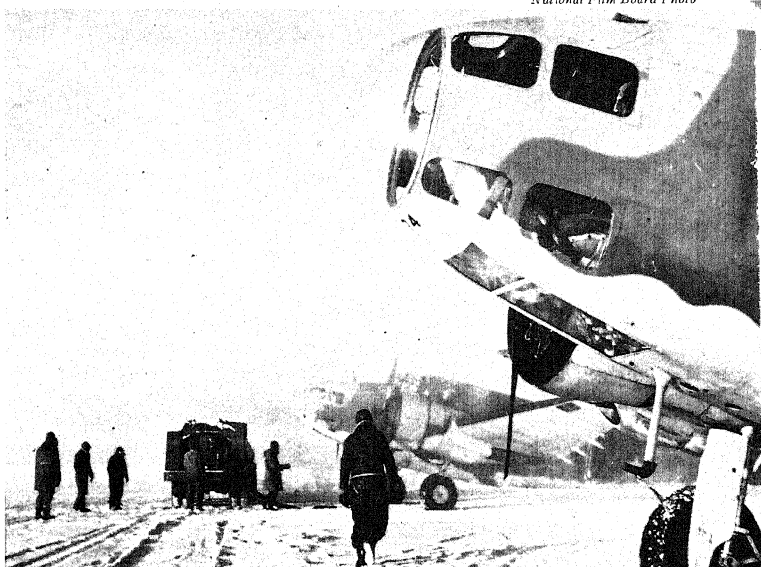


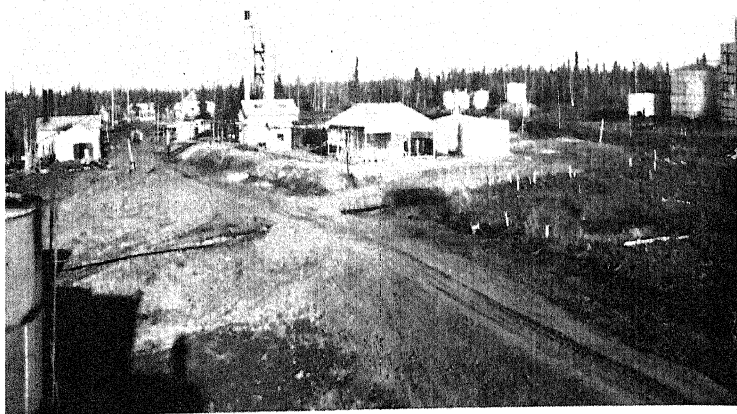
National Film Board Photo

The Airplane Makes the Most Remote Spots Accessible

U. S. Army Planes Being Serviced on the Airfield at Whitehorse

National Film Board Photo





Imperial Oil Company Photo

Refining Plant at Norman Wells

A Section of Canol Pipeline Crossing a Yukon Lake

National Film Board Photo



would be relieved. So the Canol Project was conceived as a necessary complement to the Alaska Highway.

On May 20, 1942, a United States War Department contract was signed at Washington. It authorized the Imperial Oil Company and Standard Oil of California, with J. Gordon Turnbull, Sverdrup and Parcel as architects and engineers and Bechtel, Price and Callahan as constructors, to begin work immediately on the Canol Project, expected to cost around \$138,000,000.

It was a tremendous undertaking, for it involved the development of a little-known oilfield not far from the Arctic Circle and the erection of a refinery at Whitehorse, four hundred miles away. A small-diameter oil pipeline from Norman Wells in the Northwest Territories to Whitehorse in the Yukon and ancillary pipelines, including one to Fairbanks, had to be built. Two new highways and several shorter roads had to be constructed. One of the highways was to run from Grimshaw, on the Northern Alberta Railways branch line to Hines Creek, to Fort Providence, N.W.T. From Grimshaw north to Notikewin some seventy miles of road had already been built by the Alberta provincial government and there was already a tractor road in use from Notikewin to Hay River on Great Slave Lake. Nevertheless, more than three hundred miles of road had to be constructed between Notikewin and Fort Providence and about another four hundred miles from Fort Providence down the Mackenzie River to Norman Wells. The second highway was to connect with the Alaska Highway near Teslin.

Only a few days after the contract was signed, the first United States Engineer troops under Colonel Theodore Wyman, Jr., the officer appointed to supervise the Canol

Project, were on their way to Waterways and a camp was being built at the end of steel.*

As along the Athabaska River, cutting through the oil sands, the existence of oil along the Mackenzie River has been known for over a hundred and fifty years. Alexander Mackenzie, the Canadian fur trader and explorer, was the first to note the traces of oil along its banks when, in 1879, he made his historic voyage to the Arctic Ocean down the great river which bears his name. But Mackenzie and those who followed him were dominated by the interests of the fur trade and like the other two districts of the Northwest Territories, Keewatin on the mainland to the east and Franklin in the Arctic Islands to the north, the Mackenzie District remained a preserve of the fur traders into which few others except government officials ever penetrated.

The gold rush to the Klondike which swept through the Yukon and spread out over Alaska, hastening the development of those territories, left no lasting impression on the Mackenzie District. Although parties of the gold seekers did try to make their way across the mountains to the Klondike by following the Mackenzie and Liard rivers, they made no startling discoveries of gold to inspire a new stampede from the young city of Edmonton. Gold was there, rich veins of it along the rocky shores of Great Slave Lake where some of them prospected, but not until nearly forty years later was it discovered near the present town of Yellowknife.

The search for gold led to the opening up of the Yukon and Alaska, but it has been the quest for the rare metals

* In December, 1942, the Canol Project was placed under the Northwest Service Command, headed by Brigadier General J. A. O'Connor, and in March, 1943, Colonel Wyman was succeeded by Brigadier General L. D. Worsham.

increasingly used by modern industry—a search intensified by the war—which has focused attention on the Mackenzie District; first Gilbert Labine's discovery of pitchblende on Great Bear Lake in 1930, where now the famous Eldorado mine produces uranium oxide and radium, and more recently the finding of scheelite ore, rich in tungsten, in the Yellowknife district, to which scores of prospectors were drawn when gold was discovered there in 1936. In the thirties the needs of these two new industries and the towns that sprang up around them, radium-silver at Port Radium on Great Bear Lake and gold at Yellowknife on Great Slave Lake, produced the infant oil industry at Norman Wells.

The oil was there. No one knew this better than Dr. Theodore A. Link, who is now chief geologist for Imperial Oil Limited on the Canol Project. In 1919, when Imperial Oil conducted a survey of the Canadian Northwest for oil, Dr. Link, then "a young man with a craving for adventure and a desire to see the north," as he himself puts it, was placed in charge of exploration in the Mackenzie River area. A year later the first well was brought in by a crew working under his direction.

From time to time geologists, trappers and missionaries had told of places along the Mackenzie River where oil might be found. They mentioned one place in particular about fifty miles north of Fort Norman. When Dr. Link went down the Mackenzie River in August, 1919, and reached the unbroken wilderness around what is now Norman Wells, the only way he knew he was at the spot they had described was by the oil seepages along the river bank. After he had explored the area a drilling crew was sent in by river boat. Using an ox to haul their supplies and

equipment from the river, they built a camp and prepared to drill in a place he had selected. Then he returned "outside," leaving the crew to work through the winter.

As soon as the ice went out in the spring he was back. Today he recalls with some pride that he made the trip from Peace River Landing to Norman Wells in a 29-foot launch towing a 69-foot scow loaded with supplies in five days. It is a trip that still takes seven days and longer if there is rough weather on Great Slave Lake.

Dr. Link found that the crew had drilled down three hundred feet and that oil was already seeping into the hole. "Nowadays with modern equipment we would drill that in a single day," he explained to me when I saw him at Edmonton, "but this was good progress with the equipment we had then."

Dr. Link likes to talk about the Mackenzie District, which he knows as few men even in the northwest do. His dry, matter-of-fact manner conveys little of the enthusiasm he feels, but as he warms to his subject he gives the impression of a restless, energetic man who would far sooner be out in the wilds than sitting in an office. He told me that he could spare only a few minutes, but when he discovered that I shared his enthusiasm he pushed aside his papers and brought out his album of photographs. Soon he was telling me how the first well was brought in.

"The well was taken down to 720 feet by A. W. P. Patrick, the head driller," he said. "One day he came rushing over to me all excited saying that oil was bubbling over the top. I told him this was nothing to get excited about. 'Wait until it comes pouring over the top,' I said. Not long afterwards, when I was away working up one of the creeks, he came rushing up to me again. 'Well, we've really got it this time. It's shooting up over the top,' he declared. The

well was down to 785 feet and I found the oil was shooting up about 75 feet. We capped the well, although we found out later that this was the wrong thing to have done. We should have let it blow to find out what we had. Then we left for the 'outside' to give out the news."

Word that oil had been found at Norman Wells spread like wildfire through the north and a rush to the new field started. Men flocked into the little-known Mackenzie District from all parts of Canada and the United States and some even came from Alaska and the Yukon over the old Indian trail from Ross River. Before long the area for miles around Norman Wells had been staked.

It was during this boom that planes were first used in the Northwest Territories. In 1921 Imperial Oil bought two Junkers, the "flying boxcars" of the north, and based them at Peace River. Little was known about winter flying conditions. Vast areas of the country were still unmapped. There were no repair shops beyond the base. The two pioneer bush flyers, Elmore Fullerton and G. W. Gorman, who took the planes north over the wilderness were literally venturing into the unknown. But aviation gained a lot from their mishaps.

At Fort Simpson, on the first lap of the flight, Gorman smashed the propeller and skis of his plane when it broke through the ice on landing. His mechanic, Bill Hill, with an ingenuity which has made the story one that is still told in the north, took some dog sleigh runners and, using glue boiled down from moose hide, fashioned a propeller from them. Then Fullerton flew the damaged plane back to Peace River with its makeshift propeller. He took off from Fort Simpson only two hours before the ice broke up and there was no radio to warn him that he would find water around the edges of the lake being used as a base at Peace

River. Short of gas, he had to chance a landing. The skis touched the ice and it held. When he looked at his tank there was only one gallon of gas left in it.

On a second flight, after the ice broke up, Fullerton, with Dr. Link as a passenger, crashed in the Mackenzie River. Loaded with equipment, Fullerton was flying the plane in short hops to Norman Wells.

"The Mackenzie was free of ice and the water was smooth as glass, deceptively smooth as it proved, because Fullerton was unable to judge how close he was and gunned his engine just as the plane touched the water," Dr. Link said, describing the incident for me. "A pontoon broke and the plane settled to the river bottom, with the three of us, Fullerton, the mechanic and I, clinging to a wing tip above the water. We were taken off in canoes and later the plane was salvaged and taken to Norman Wells."

Neither of the planes succeeded in getting to Norman Wells, but it was the beginning of aviation in the northwest.

The oil boom collapsed in 1922 when Imperial Oil abandoned its drilling operations at Norman Wells to turn its attention to the new California oilfields. Enough initial work had been done, however, to prove that the field could be developed. Imperial Oil had drilled three more wells besides the discovery well and in one of these on Bear Island in the Mackenzie River, oil had again been struck.

For ten years nothing more was done. Then, in 1932, the new radium-silver mines on Great Bear Lake began looking for a local supply of gas and oil, which had to be brought by boat down the Mackenzie River or flown in

during the winter—a gallon of gas used to cost around two dollars at Fort Norman. With a local market to be supplied, Imperial Oil brought its discovery well into production and erected a small topping plant at Norman Wells, about three hundred miles from Port Radium. Barges took the gas, diesel fuel and crude oil up the Mackenzie River to Fort Norman and up the Great Bear River as far as the rapids. Here an 8-mile pipeline was built. The oil was pumped from a tank at one end of the rapids, run through the pipeline to another tank and then transferred to barges which carried it across Great Bear Lake to the mines. Trucks carried the gas drums over a portage road and brought back sacks of ore concentrates.

After 1938, when the Con, Negus and other mines there started producing, Yellowknife was supplied from Norman Wells, while Abasand Oils also undertook to supply the new gold-mining town with diesel and fuel oil. But Norman Wells was still a small field, with only four wells producing, when the Canol Project was started.

As a partially proven field Norman Wells was selected by the United States Army when the supplying of gas and oil for its gigantic projects in Alaska and the Canadian Northwest became an urgent military problem.

During the years the field had lain neglected or confined to very limited production, the Soviet government had been sending out geological parties to explore the north for oil, as the Canadian government is doing now. New fields had been discovered in the Taimir National Area of Siberia and the oil resources of the Nordvik region around Khatanga Bay and the Yenisei River basin drawn upon to further the development of a north in which new cities were arising. In the Canadian North-

west the lost years had to be made up and the Norman Wells field, which in 1941 had produced only 23,664 barrels of oil, developed as fast as equipment could be transported, new wells drilled and refinery and storage facilities erected.

Obviously, the Norman Wells field alone could not supply the army's needs, even if it fulfilled all expectations, but it was one of the only two sources immediately available. The other was the Athabaska oil sands, where development was being delayed while the Consolidated Mining and Smelting Company made its investigation; and in view of the geological surveys already made and the practical results achieved after years of experimental work, the delay was in odd contrast to the bold development of Norman Wells. Beyond these two sources little was known about the oil resources of the northwest except that there were several promising areas.

With the Canol Project centered around Norman Wells, building of the oil pipeline while the field was being expanded became the most important task. Development of the field itself was not hindered by technical difficulties. The oil was of such a grade that it flowed easily at low temperatures. Modern drilling equipment could bite through the permanently frozen ground, only the surface of which thawed in summer, even though the estimated average depth of frost in the region was ninety feet. Transportation was the greatest problem and it could not be fully solved until completion of the new highways enabled river boats and planes to be supplemented by trucks in carrying the thousands of tons of equipment required for the projects. Construction of the oil pipeline across four hundred miles of rugged country was also dependent upon completion of the new highways, although the pre-

liminary work of mapping the area was begun immediately.

Even finding a route for the oil pipeline was not easy. For twenty-five miles or so from the Mackenzie River the country is low and swampy. Even in the mountains there are occasional stretches of muskeg. It is difficult to operate tractors there after July, for then the region becomes one great swamp. The best time to travel in the Mackenzie District is in the winter and it was during the winter of 1942-43, one of the severest in years, that the United States Army sent out its survey parties.

During the months of December, January and February, seven parties were sent out in an effort to find a feasible route through the Mackenzie Mountains.

"The first two crews used horses, but they had to turn back when they got stuck," cheerful, energetic Brigadier General J. A. O'Connor, who heads the Northwest Service Command, told me. "Two other crews went into the mountains with tractors, pulling their supplies on sleighs. They too got stuck. The other three crews used dog teams. Two of them couldn't make it, but the third got through and found a route."

One of those most affected by the pipeline is William S. Drury, a partner in Taylor and Drury, the Yukon fur traders and merchants, who makes annual trips to his posts in the region.

Two of these seven trading posts, Ross River and Sheldon Lake, are on the direct route of the new highway to Norman Wells, while a third, Pelly Banks, lies up river from the Ross River post. Another post is at Teslin on the Alaska Highway. For many years Taylor and Drury used river steamers and motorboats to reach the posts, supplies being taken as far as Ross River and then trans-

ferred to scows for the outlying posts at Pelly Banks and Sheldon Lake. In more recent years planes have been used. Now, Sheldon Lake, in its setting amid a chain of lakes under towering Mount Sheldon, one of the loveliest spots in the northwest, will no longer also be one of the loneliest, and Frank McLennan, Taylor and Drury's trader, will not be the only white man there. A new settlement, linked by highway with the growing centers of the northwest, is rising beside the trading post and the few Indian shacks.

"Roughly, it's the historic trail followed by the Indians when they used to come across the mountains from Fort Norman to trade at Ross River," Drury said, telling me about the new highway, which already had been pushed beyond his Ross River post. "They followed the Gravel River—it's now called the Keele—and crossed the divide to the head of Ross River. When oil was first struck at Norman Wells a number of men from the Yukon took this route. Frank Edsel, who has charge of our post at Ross River, was one of them."

Today trucks are going over the same route.

In the summer of 1942 residents of the settlements along the 1,100-mile water route from Waterways to Norman Wells witnessed the beginning of a development which they would have been justified in dismissing as an idle dream had it been suggested before the war. The booms which gave birth to Port Radium and Yellowknife had brought new faces into a territory where most faces had long been familiar, but they had produced only local changes. This new development was changing the whole territory overnight, compressing into a few months the slow changes of peacetime years to effect a vast trans-

formation. It brought so many new faces along the Mackenzie River that soon the newcomers far outnumbered the residents.

Men poured into the Mackenzie District from Canada and the United States—engineers and construction workers for Bechtel, Price and Callahan, the Canol Project contractors; surveyors and drillers for Imperial Oil, Standard Oil of California and the Noble Drilling Company; shipyard workers and longshoremens, cat operators and mechanics—all heading north into a country few of them had read about and fewer still seen. With them came American troops, whites and negroes, most of them disappointed because this did not coincide with their conception of foreign service. Before long miners were leaving the mines and trappers their traplines to work on the new projects. Even the old-timers who shook their heads and declared flatly that the pipeline could not be built over the route selected were presently helping to build it.

“Our trapline had been burned out; so my husband took a job on the boats and I went to work as a cook,” the wife of a trapper at Fort Simpson said to me. “It made all the difference to us.”

Carloads of tractors and road machinery, building materials and supplies began to move over the railroad to Waterways. From Waterways the materials went by river steamer and barge down the Clearwater and Athabaska rivers to Fort Fitzgerald, by road over the portage to Fort Smith and by river steamer and barge again across Great Slave Lake and down the Mackenzie River. Even with the long summer hours of daylight which enabled boats to travel day and night, it was a long trip: from seven to nine days to Fort Smith and another seven to nine days to Norman Wells.

The steamers and barges already on the Mackenzie River could not handle the suddenly swollen traffic. River boats and barges had to be brought in from the United States and with them pilots from the Mississippi and Missouri rivers. But many of these boats had too big a draft for the Mackenzie River, where the draft limit is seven feet at high water. They ran onto sandbars in waters which specially built flat-bottomed stern-wheelers like the *Distributor*, with a draft of only twenty inches, could navigate with ease. The pilots, unfamiliar with these northern rivers and lakes where even veteran skippers use Indian pilots, had difficulty in finding the channels. Boats were lost, particularly in storms on Great Slave Lake, where one boat carrying eight tractors went down, and with them equipment needed for the projects.

I heard a lot about these transportation difficulties from men I met while traveling through the northwest. As I had been informed at the War Department in Washington and again at the Department of External Affairs in Ottawa, the Canol Project was officially a secret and the details could not be released. (The first official announcement was not made until June, 1943.) The weakness in this official attitude was that nearly everyone I met knew about it and was discussing it freely. Many were outspoken in their criticism. Lacking any official information, people relied on the fragmentary reports published in the Edmonton newspapers and on the accounts related in every hotel lobby in Edmonton by men returning from the north. As a result, the not inconsiderable positive achievements were being lost sight of in this criticism, however justified, of transportation difficulties arising from the expedients adopted.

Yet, despite these difficulties, most of the equipment was

getting through to Norman Wells and the river front hummed with activity it had not known since the boom days. The new oil structures which emerged from the bush presently added to the steadily rising flow of oil. In 1941 only 23,664 barrels of oil were produced from the four wells then operating, but by November, 1942, the field had been developed to produce 20,000 barrels a day, as the Truman Committee's investigation disclosed.

W. J. Thomas, the Idaho-born chief engineer of the Radium Express, one of the Northern Transportation Company's twin-screw all-steel Mackenzie River boats, summed the situation up for me in these words:

"Many of the barges were built for river traffic and were unsuited for lake use. Bad loading was also responsible for some of the losses. I saw one barge arrive at Fort Norman carrying cats which had been loaded on round poles. When badly loaded barges like this got caught in storms on Great Slave Lake their loads shifted. But I'd say that considering the amount of material taken through to Norman Wells, the percentage lost was remarkably small. It was a real achievement."

I met Thomas, a quiet, stockily built man who talked of his work in a casual but confident manner, on the train to Peace River. He was on his way to Hay River, where the Radium Express was frozen in late in the fall of 1942. With three barges and a stern-wheeler in tow, she had pulled in to avoid a storm on Great Slave Lake and was unable to get out again.

While United States Engineers were completing roads from Fort Nelson, on the Alaska Highway, to Fort Simpson and from Fort Smith to Fort Providence in the winter of 1942-43, Thomas was taking tractor trains over the winter road to Hay River and building 220 miles of tractor road

across the ice of Great Slave Lake, part of 1,000 miles of tractor road built to Norman Wells.

"We went from Ras Delta camp to Mills Lake camp with five hundred tons of freight in seventeen days, building the road as we went and putting in five bridges. There were twenty-eight of us in the crew and we worked as long as twenty hours a day, sometimes thirty-six hours at a stretch, because the wind on the lake made the job difficult at times."

Thomas spoke of it as casually as though it were a paving job on Main Street, although there was anger in his voice when he recalled the carelessness with which some of the operators in the tractor trains following his had handled their tractors.

"There was very little snow on the tractor road to Hay River this winter, and when I took my first train through there was no snow for four days out of Peace River," he said. "I had a good crew, but the way some of the operators in the trains following mine handled their cats you would have thought we could get new equipment just like that. They wrecked a lot of machines by battering the tracks on the rocks and burning the shoes off the sleighs. You can pull sleighs over bare ground if you hold the speed down, but you'll wreck your tractors if you try to push through at any cost, and that's just what some of them tried to do.

"When we were building the ice road across Great Slave Lake two cats which had been driven ninety-two miles from Hay River without any lubricating oil in them arrived at our camp. I was in my tent when one of our mechanics came to me and said that the operators were starting to tear down our cats, which were in good running condition, to repair their own. It was neglect of machines like this and disregard for the other fellow's problems that made

the job more difficult. Only machines maintained in good condition would stand up. Those that broke down and could not be repaired on the spot had to be abandoned and sometimes it was weeks before they could be used again. I know where there are two big D8's still standing in the bush. Between Ras Delta camp and Mills Lake camp our tractors each put on thirteen hundred miles, but they were all running smoothly when we arrived because they had been handled properly."

Thomas' most difficult task was in taking the first tractor train through the treacherous ice and open water of Providence Rapids.

"When I was asked if I thought I could take a train through Providence Rapids I said I could, although no train had ever been through these rapids before," he said. "I knew every rock in them and I was sure I could find a road through. But I did stipulate that other trains following me must not deviate one foot from the road I built because of the thin crust of ice on top of the rocks in many places. When we got to the rapids a blizzard was blowing and I could not see the landmarks I had counted on to guide me, but we decided to go through. It took us a day to go eight miles, feeling every foot of the way and working during lulls in the storm. In our train we had seven cats hauling four cabooses, three oil sleighs and thirty-one sleighs loaded with pipe, and we only lost one old sleigh that broke and had to be left behind for the next train to pick up."

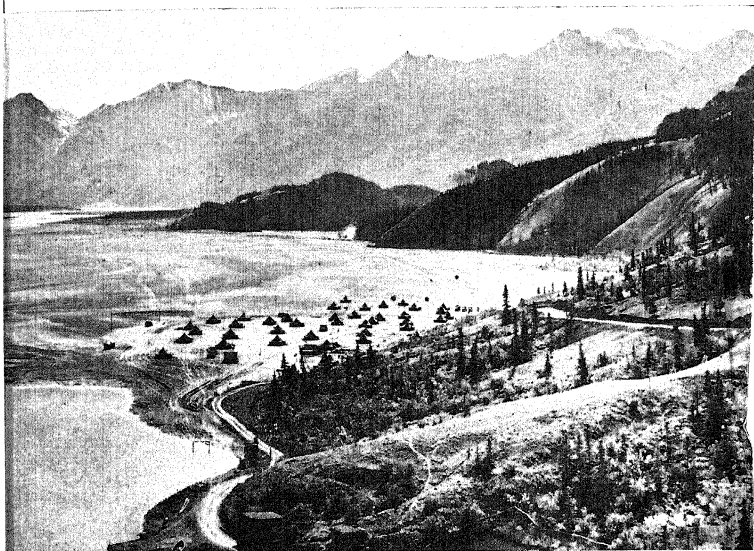
Winter did not halt work on the Canol Project. Rather, it facilitated travel where roads had not yet been completed. The ice that locked the waterways to the river steamers opened highways to the tractor trains that took up the tremendous task of hauling freight. Planes, exchange-

ing their pontoons for skis, continued to fly between Edmonton and the camps and settlements along the Mackenzie River with supplies and equipment. More than eighteen thousand tons of freight were flown to Norman Wells, where new wells were coming into production every month. And all the time, thin threads were stretching out into the wilds. They were the new pipelines through which Alaska's growing transportation system, the trucks on its highways, the planes using its airfields, the ships calling at its ports, could be supplied with gas and oil.

Construction of the highway and oil pipeline from Norman Wells to Whitehorse was begun at both ends. When the breakup came in 1943 the work on the highway was already well advanced and the pipe-laying gangs could start to build the "Little Inch" line across the mountains.

The transportation difficulties which held up the Canol Project in the first few months were overcome by the rapid construction of highways during the winter of 1942-43 and most of the material was transported to Norman Wells and Whitehorse in readiness for the summer's work.

Only a small part of the fifteen thousand tons of pipe for the oil pipeline was taken to Norman Wells in the summer of 1942. The greater part of it had to be left at camps hastily built along the river route from Waterways to Norman Wells because even the fleet of boats and barges carried overland to augment the boats operated by the Hudson's Bay Company and the Northern Transportation Company could not transport all the material needed for the project in one short summer. The pipe left at Slave River and other points was picked up by the tractor trains and taken over the pioneer winter road to Norman Wells, while the rest of the pipe for the project was either sent by rail to Prince Rupert and shipped by sea to Skagway for transportation



Wartime Information Board Photo

Engineers' Camp Seen from the Mountain Section of the Highway

Typical Cut and Fill on Alaska Highway

Wartime Information Board Photo





National Film Board Photo

Bonfires Built to Thaw Out Giant Caterpillars at White River

Army Truck Crossing Glacial Stream at Duke River

National Film Board Photo



over the White Pass and Yukon Railway or carried in trucks over the Alaska Highway.

When equipment was urgently needed it was flown to Norman Wells. During the summer of 1942 landing strips were hewn out of the bush along the Mackenzie River and these enabled big cargo planes to be flown over the route without any delays during the freezeup and breakup periods when neither skis nor pontoons could be used.

The American troops I saw working along the Norman Wells road from Teslin were cutting their way through the wilds beyond Ross River to meet other troops who were then in the foothills of the Carcajou Mountains west of the Mackenzie River. Diesel oil pumped through a pipeline across the Mackenzie River from the refinery at Norman Wells to the big Canol camp five miles away was already being used for the trucks and bulldozers on the access road. Pipe-laying gangs were beginning to extend the pipeline toward the mountains, welding the thirty-foot lengths of pipe into one long continuous line of steel. Some time in the fall of 1943, I was told, they would cross the divide to meet other gangs of welders building the pipeline from Whitehorse. The last length of pipe would be welded into the completed pipeline and pumping stations would send the oil coursing through a new artery of supply for Alaska.

When Captain H. S. Montin of the United States Engineers was placed in charge of the pipe-laying work at Norman Wells many people told him that the pipeline could not be built in time to serve its purpose. But Captain Montin, an experienced oil construction engineer from Oklahoma, did not agree with them. The same thing had been said about the Alaska Highway. He knew an oil construction worker in Oklahoma who could build the pipeline if anyone could. So he sent for C. F. (Unk) Jones. To-

gether they studied maps and plans and traveled over the country through which the pipeline was to run.

They recognized that it was a formidable task. They would have to build through several mountain passes, the highest of them eight thousand feet, and across long stretches of muskeg. While the distance from Norman Wells to Whitehorse was about 400 miles, they would have to lay about 550 miles of pipe because of the devious route to be followed. Fortunately, the oil had a paraffin base and would flow even at sixty degrees below zero. The pipeline could be laid on top of the ground without the need for burying it as protection against the frost. But to force the oil through the pipeline over the mountains pumping stations from thirty to fifty miles apart would have to be built.

Big "Unk" Jones is the kind of man to whom no pipe-laying job is impossible. Building a pipeline through the sub-Arctic wilderness was a job beyond even his wide experience but when he gave his considered opinion everyone knew what he would say.

"Yeah, I reckon it can be done," he stated. And as foreman of the gang of welders working out of Norman Wells he set out to prove that the impossible could be done again, as it had already been done in building the Alaska Highway.

Once the pipeline is completed and in full operation the cost of aviation gas will be reduced to one-quarter the cost of carrying it in trucks over the Alaska Highway and one-tenth the initial cost of flying it to the airfields before the highway was built. As a means of supplying Alaska's military needs in carrying the offensive to Japan the Canol Project is one of the most important of the new developments. Provided it is maintained in the postwar period, it

will influence the whole development of transportation in the northwest.

Norman Wells has already been proven as an extensive field, fulfilling the promise it must have held when Imperial Oil quietly acquired the best claims after the boom collapsed in 1922. But the full extent of the new oil industry will depend upon what further development work is undertaken as a result of the discoveries made by the geological parties which during the summer of 1943 explored the northwest for oil. If new fields are brought into production, particularly in the areas set aside as oil reserves by the Canadian government—around the Thunder and Carajou rivers in the Mackenzie District and Hungary Lake in the Yukon—the water route to Fort Yukon may be developed to tap them. This route, down the Mackenzie River to Rat Portage and then westward down the Bell and Porcupine rivers to Fort Yukon in Alaska, has the advantage of providing water transportation most of the way to both Whitehorse and distant Nome.

In Alaska, however, people are beginning to demand the development of the territory's own great oil resources. Delegate Anthony Dimond of Alaska has termed the development of the Norman Wells field at a cost of more than \$100,000,000 "completely inexcusable." He believes the oil industry should have been developed in Alaska rather than in the Canadian Northwest.

This is the inevitable result of the opening up of a new frontier in wartime. While the present projects provide the foundation for postwar development, they are designed to serve an immediate military purpose—to enable an offensive to be launched against Japan. Consequently, what

is justifiable as a military expedient might not in peacetime be considered the most practical measure for development of the territory as a whole. Indeed, the history of the northwest until the war is principally one of neglect and it is improbable that the development would have been undertaken at all had the war not converted opportunity into necessity. Military needs must at times conflict with the interests of groups concerned with the postwar future of the northwest, as they have in Alaska. There military considerations dictated against the development of the territory's resources while there was still a grave threat of invasion. Unquestionably the oil reserves set aside in Alaska by the Department of the Interior should be developed. But this is only part of a greater problem which will face both Americans and Canadians in the postwar period—the use of the new oil industry to promote the systematic development of industry in the northwest.

Peace River—It Can Feed Millions

On a warm spring day in 1933 I stood on the long main street of Grande Prairie in northern Alberta and watched the trucks and cars coming into the little town. Among them were some that were plastered with mud and looked as though they had been driven a long way. The men behind their wheels and the women sitting beside them were tired and unsmiling. When they parked their trucks, carefully measuring the gas and examining the tires, they stood looking around uncertainly, eager to talk to anyone who could tell them about this new country of which they had heard so much. The children lolling out of the windows or perched on the jumble of household goods in the backs of the trucks found it all strange and exciting. They had no thought of the hard work ahead.

The men driving these trucks were farmers from the drought-stricken areas of Saskatchewan, where the shifting dust had smothered their once fertile farms, and they were coming to the Peace River country to make a new start. To them it was a promised land and there was new hope in their eyes as they looked out at its grassy prairies and coppiced valleys. Beyond the settled areas were thousands of square miles covered with birch and poplar and willow. It was fertile land, parts of it good wheat-growing coun-

try, parts of it suited to dairy farming and small-scale ranching because of the luxuriant growth of native grasses, and all of it waiting only for industrious hands.

The promise was there but it was slow to be fulfilled. The Peace River country, larger than Idaho or Kansas, could produce enough to feed millions of people. Extending from Prince George north to Fort Nelson, east to Lake Athabaska and south to Lesser Slave Lake, it took in some sixty million acres of agricultural land in northern Alberta and British Columbia. But it lacked the people. Transportation to distant markets over the Northern Alberta Railways and a few poor roads was costly. Good crops could be raised but they could not be so easily marketed. Like the vast areas to the north of it, the Peace River country needed roads and railroads before it could come into its own.

I went to the Peace River country again in the spring of 1943, over the Northern Alberta Railways line that goes north to Lesser Slave Lake and then west to Dawson Creek.

People in Edmonton like to speak of their city as the beginning of the Alaska Highway, and no doubt it will be, but the Alaska Highway really begins at Dawson Creek in the Peace River country, five hundred miles away. While there is an indifferent road used by local traffic between Edmonton and Dawson Creek, most of the freight for the highway is carried by the railroad. Between March and December of 1942 more than seventy-five hundred carloads of freight rolled over the line to Dawson Creek, an amazing amount for a small, poorly equipped railroad, but hardly a reason why the highway should not be extended to Edmonton.

The train was crowded with soldiers, farmers and resi-

dents of the little towns along the line, and men going to work on the projects along the Alaska Highway. Battered suitcases, sleeping bags and bedrolls filled the racks and the seats were strewn with clothing. On the platforms between the cars still more baggage was stacked. Men from Texas and North Dakota played blackjack and four-five-six with other men from Ontario and Manitoba and there were crisp new bills on the upturned suitcases. Old-timers who had been knocking around the north half their lives found receptive listeners among the Americans seeing the country for the first time. And nearly everyone, it seemed, had a bottle and was saving it for a last fling in Dawson Creek before going up "The Road."

The sleeper ahead was completely taken over by a crew of workers for the Catel Project—Catel is also an abbreviation and stands for Canadian Telephone—the telephone-teletype line between Edmonton and Fairbanks. I had traveled on the train from Winnipeg to Edmonton with some of them, men from Idaho and Nebraska, and they had not liked the dreary snow-covered prairies.

"I'm going to get the best outfit I can find in Edmonton, no fooling," one of them remarked to me.

I tried to convince him that these were the last weeks of winter, but I could see that he did not believe me. He had heard that it was fifty below in Edmonton.

Now the weather was warm and the snow was melting along the bottom lands of the Peace River. But in the car ahead new parkas hung from every hook, swaying with the train, while sheepskin-lined jackets, sweaters and heavy shirts were piled on every seat. I still wonder what they did with it all.

As the train unhurriedly pushed its way deeper into the heart of the rolling country north of Edmonton the coaches

began to empty. At every little stop along the line farmers and their wives and children got off, returning to their own familiar world where talk was not of building highways hundreds of miles into the wilds but of such prosaic things as the price of hogs and the difficulties of getting help with high wages being paid in every construction camp. Spring was not far off and fields had to be plowed and seeded, although much of last year's grain was still in the fields unthreshed because the winter came early and help was short. While the coming of the Alaska Highway had brought many changes into their busy lives there was still an unreality about the road to faraway Fairbanks and Nome. There was nothing unreal about the new market it had created in a country where marketing had been the greatest problem of all.

Before 1942 Dawson Creek was a hamlet of some three or four hundred people, the head of steel on a rickety railroad over which the train ran twice a week. It was the last stop at the edge of the wilderness. Farms lined the rough dirt road to Fort St. John, fifty miles to the north, and beyond that stretched a country of forests and mountains known only to a few trappers and prospectors. Dawson Creek had a hospital and hotels, a block or so of stores and restaurants and a railway station, beside which stood its elevators and stockpens. On the days the train came in the farmers came to town and people ran over from Pouce Coupe eight miles away, which was no bigger than Dawson Creek but assumed some importance as the administrative center for the British Columbia section of the Peace River Block. On other days the streets might be deserted.

Now Dawson Creek houses some fifteen thousand peo-

ple, including the troops stationed there, while Pouce Coupe is still a struggling little hamlet accommodating the overflow from its inflated neighbor. The train runs every day, but it is always crowded with men going over the highway and most of them have to be housed at least one night in Dawson Creek.

The once quiet little hamlet where nothing ever happened has become a boisterous boom town where everything happens. Miles of new streets, laid out to a plan, stretch in every direction across the rolling prairie. The streets are numbered, the avenues are named for presidents of the United States and the roads for Canadian and American cities, all marked by neat black and white signs. In spite of this, it is difficult to find a particular camp or office and it is easy to get lost. Even the American corporal who drove me around the town lost his way returning to our quarters.

The new streets are lined with an amazing disarray of Nissen huts and shacks, log cabins and converted trailers, army barracks and contractors' camps, crowding one another for space. Along the railway sidings the elevators now soar incongruously above camps and warehouses, and farm wagons stand side by side with big army trucks. The stockpens are almost hidden by the huge piles of supplies waiting to be carried over the Alaska Highway.

On the hillside above the railway and on vacant ground around the town I saw a tremendous amount of the heavy road-building machinery used in the construction of the Alaska Highway—part of the 300 tractor-equipped scrapers, bulldozers and trail-builders, 1,000 trucks, 125 air compressors, 50 power shovels, 200 electric-light plants and 65 portable repair shops, without which the achievement would have been impossible.

The original village—what is left of it after the fire in February, 1943, which spread to an old livery stable where dynamite was stored and destroyed the Dawson Hotel and an entire block of buildings in an explosion felt at Pouce Coupe—is almost lost in all this confusion. But everyone there is busy.

In shabby little cafés, where the juke boxes are never silent and men stand around waiting for a vacant stool, quiet, efficient Chinese serve meals day and night to workers coming in from the highway, although at Pouce Coupe the cafés are sometimes empty. The beer parlor opens its doors to the waiting crowd for one hour and closes again until the next day. The stores do a bargain-day business every day.

"We'll never see anything like this again," one harassed storekeeper said to me. It was hard to tell whether he was glad or sorry.

Outside the post office I found a sign that read, "Post office closed until we get squared around." When I went back some time later there was a long line of men waiting patiently outside. I joined the line and presently found myself at the wicket. A tired girl asked mechanically for my name, looked through a stack of letters and shook her head.

"Come back tomorrow," she suggested. "We've still got a lot of mail to sort."

While Dawson Creek was still a village the little post office served the surrounding district efficiently. It can hardly do so now. The volume of mail is so great that the staff cannot keep pace with it, even though everyone works twelve and fourteen hours a day. And mail is very important to the men working along the highway.

The rapid growth of the town and the problems created

by it have already given Dawson Creek its first municipal crisis. As a village it came under the Village Municipalities Act of the province of British Columbia. But in one hectic year its problems had become those of a town. When the United States Army moved in, residents were getting their water in a horse-drawn tank wagon from a creek four and a half miles away.* The army also had to haul its water because there was no ground water in the whole area. With thousands of men passing through the town and the resident population increasing every month, sanitation and public services became serious problems. Finding their powers restricted, the village commissioners resigned in a body. Then the provincial government, appointing others to serve their unexpired term of office, brought Dawson Creek under the Municipal Act, empowering the town to raise money by bylaw for public works and services.

All this constituted another problem for Colonel Albert L. Lane, in command of the Dawson Creek railroad. The United States Army, in a sense, had occupied the town and created these problems. Colonel Lane and his officers had to meet with the commissioners, deciding what work the army could properly undertake and what must be left to the townspeople themselves, some of whom seemed to think that the army should do everything.

It speaks well for the army that, with a few isolated exceptions, relations with Canadians everywhere in the northwest have been maintained on a most friendly basis.

As new industries are established in the northwest and people move into its empty spaces, transforming other vil-

* In August, 1943, arrangements were made between the United States government, the Dominion government and the government of the province of British Columbia for construction of a sewerage system and a water supply system for Dawson Creek.

lages into towns, the Peace River country must become the breadbasket for a great part of the region. There are many other localized areas both in the Canadian Northwest and Alaska suited to farming, particularly along the Mackenzie and Yukon river valleys and the Tanana and Matanuska river valleys, but the Peace River country is the only extensive agricultural area.

It has a moderate climate for these high latitudes, although it is uncertain and no two successive years are much alike. The winters are not mild, but they are modified by soft winds blowing through the mountain passes, and while the temperature occasionally drops far below zero there are no blizzards. Spring comes quickly. By the end of April or the beginning of May the ice breaks up on the rivers and lakes and seeding is usually well under way. Even at northerly Fort Vermilion, where the Experimental Farms Service of the Department of Agriculture maintains a substation, seeding begins around the first days of May.

The long summer days and the rains between June and August produce rapid growth. Early ripening strains of wheat which take 110 to 115 days to mature in the southern part of the country mature in 95 to 100 days at Fort Vermilion, where the lower altitude and even longer hours of sunshine offset the shorter growing season. Long before the first settlers entered the Peace River country, the fur traders were growing wheat at Fort Vermilion and grinding it in small mills for the northern trade and large quantities were sold to the men who went from Edmonton to the Klondike by way of the Peace and Mackenzie rivers.

The success with which wheat and oats can be grown in what is still a new country brought international fame to Herman Trelle of Wembley in the Grande Prairie district when he won the world's championship for both wheat and

oats at the International Live Stock Exposition at Chicago in 1926. His winning wheat exhibit was the famous Marquis strain. In three years, 1926-28, he won 186 awards, including 43 championships and 7 world's championships. Yet more than thirty years before his success first focused attention on the possibilities of the country, the world's championship had been won by the Reverend Brick Gough, an Anglican missionary, with wheat grown at Shaftsbury, a few miles from the town of Peace River.

"Yes, it's a great country all right, although it has its ups and downs like any other," one farmer I met at Dawson Creek said to me. "Last year we had bumper crops. Wheat was poor in some places, but I know some farmers who got thirty-five and forty bushels to the acre. Some got as high as a hundred bushels of oats, and alfalfa seed ran up to five hundred and fifty pounds an acre.

"But," he added, "bumper crops don't help if you can't harvest them. All this construction work has given us a big lift, sure, and it's also given us a big headache. Men were asking six and seven dollars a day to go harvesting last year. God knows what they'll be asking this year. You can't blame anyone for taking the wages the contractors are paying. It's the first time in years most of the men up here have had a chance to earn a decent wage. With the prices we're getting we can't match it, that's all. Some of the farmers have gone to work on the road themselves. And maybe it's not such a bad idea."

The great stretch of country between Fort Nelson and Teslin opened up by the Alaska Highway is still too new for its agricultural possibilities to be estimated. Before American troops started to push the highway through it had never been more than sketchily mapped and its resources were unknown. But in August, 1942, W. D. Al-

bright, superintendent of the experimental substation at Beaverlodge in the Alberta section of the Peace River Block, made a trip to Fort Nelson, 265 miles north of Fort St. John.

On the river flat below Fort Nelson he found that Captain W. W. Kelland, the resident airport engineer, had planted a garden of more than four acres.

"Beans were heavily podded in mid-August and on the point of ripening," Albright, who is considered an authority on farming in the northwest and is certainly an enthusiast, said. "Twenty-five bushels of lettuce had been given to the United States Army and all kinds of vegetables had been supplied to the construction camp."

Before the first killing frost on September 26, the garden produced several hundred cabbages and 150 marrows, in addition to a heavy potato crop.

"While wonderful gardens are grown along the narrow flats of the Fort Nelson River, a tributary of the Liard, the soil and climate of the Liard River basin, comprising some sixty-four million acres, are still open to question," Albright stated. "In 1930 one official who had traveled through the region thought there might be twenty million acres of potential crop land in the Liard River basin, but a fur trader living there dismissed the plateau as being useless for agricultural purposes. Probably a good deal of the land may eventually be cultivated under the handicaps of short summers and long winters with deep snow cover."

When new settlers flock into the Peace River country, clearing the land and pushing the forest back beyond the present sparsely settled areas, the first to feel the effect will be the trappers who now range the country north of Fort St. John. Already they are noticing the effect of the

Alaska Highway. Some of them resent the highway because they foresee the development it must inevitably bring, but others welcome it because it has opened new areas to them.

"The highway has not yet affected my trapline, although it has affected the lines of some trappers," Tommy Foote, who runs a trapline in the Buckinghorse River country, told me when I saw him at Dawson Creek. "In 1941, before the road was built, I was thirteen days going into my trapline with horses. Last year, after the road was built, it took me five hours and I got sixty miles further in."

Colonel Lane found Tommy Foote, wiry and active for all his fifty-five years, just the man he wanted when he arrived at Dawson Creek in April, 1942, to direct the survey for the highway between Fort St. John and Fort Nelson. Foote, who came to the Peace River country in 1912 before there was even a village at Dawson Creek, and had been a forest ranger for twelve years, was one of the few men who knew the country. He traveled with Colonel Lane through the wilderness between the Peace and Muskwa rivers, exploring the route for the highway and packing for the surveyors who followed the trail they blazed.

"It's odd the way the highway has affected the game, though," Foote remarked to me. "Last winter the caribou were driven to the low muskeg country by the very cold weather but do you think they would cross the highway? No, they traveled parallel to the highway for miles and where a drainage ditch had been dug at right angles to the road they skirted it. Very few wandered onto the highway. In time, though, I guess they'll get used to it."

One man, and there are not many still living, who has seen the passing of the fur traders from the old northwest and the rise of the Peace River as an agricultural country, is old Frank Wort Beatton. There were only Indians in the

country when he first came there. Now he sits at the window of his little house outside Fort St. John and smokes his pipe, watching a stream of trucks and cars speed over the road.

"I never dreamed I would live to see a highway running through this country," he says, "but I'm glad it was built. It means a lot to the people of this district. Now, if they'll extend the railway from Hines Creek to Fort St. John as they've been promising to do for years, this district can really be opened for settlement."

Beatton went to Canada in 1883, when he was a boy of eighteen, as one of a group of fishermen hired in his native Orkney Islands by the Hudson's Bay Company to work on Lesser Slave Lake. He was given a five-year contract and sent to Fort Dunvegan, the old company headquarters for Peace River, to begin what proved to be forty-five years' service with the company. He traveled from Lake Winnipeg up the Saskatchewan River to Edmonton, then the head of navigation, by Hudson's Bay Company steamer. From Edmonton he went by oxcart to Athabaska Landing, by york boat to Lesser Slave Lake and by oxcart again to Fort Dunvegan.

"Edmonton in those days was smaller than Fort St. John is now," he recalls. "There were only two or three stores and the Hudson's Bay Company still had its fortified stockade standing."

The old post of Fort St. John, down river from the present town, was the center of a rich fur country when Beatton became the factor there in 1901. The Indians used to bring in red, black and silver fox, marten, lynx and beaver, most of which are gone from the district now. There were a few white men in the country, French-Canadian miners who wandered up and down the river panning gold from

the bars, but there were still no settlers. And there were no roads. In the summer supplies came up the river by boat and in the winter Beaton hitched up his dogs and took to the trail.

"I used to make the trip to Hudson Hope and back—sixty miles each way—in one day with dogs," Beaton sometimes tells his visitors as he contrasts the old means of travel with the new. "I started early in the morning, running behind the dogs half of the time, and got back after dark."

He watched the country grow and the fur trade decline. He saw the railroad push its way from Edmonton toward Fort St. John. But he has never seen anything like the town of Fort St. John since the Alaska Highway was built.

Housing transient workers in the overcrowded town is as great a problem as it is at Dawson Creek and for a time profiteering was rife. In all of the new boom towns people can get almost any rent they ask and nowhere were they asking more than in Fort St. John.

When Judge Eric Woodburn arrived in the town in the summer of 1943 he found one hundred cases under the Wartime Prices and Trade Board's regulations, which govern rentals, awaiting his attention. Having heard the cases and made a quick personal inspection of all the premises, he handed down his decisions. One man had been paying sixteen dollars a month for a tent with wooden floor and sides. The judge reduced it to three dollars and fifty cents. Another had been paying fifty dollars a month for a single room. His rent was cut to fifteen dollars. A farmer who had been getting sixty dollars a month for part of his farmhouse was told that he could not charge any more than twenty-five dollars. Then the judge left for the town of Peace River, where he had five hundred similar cases to

hear. On his way out of Fort St. John he saw five abandoned cabins being hauled into town by unabashed citizens.

Fort St. John, which until 1942 had less than three hundred people, now has a population of some four thousand, but where Dawson Creek has many new buildings it has had to accommodate transients in tents and trailers, lean-tos and converted barns. Even the one barber shop was in a tent for months. The dance hall, where no girl ever lacks partners, is a converted garage. There are few new buildings and the short shabby main street conveys an impression of neglect and poverty that is only accentuated by the outward evidence of the boom. There is no poverty now. High wages are being paid along the highway and there is work for everyone. Eggs are thirty-five cents a dozen, potatoes are six dollars a hundred and there is a ready market for all local produce. But not so long ago the eggs were being fed to the hogs and the potatoes rotted on the ground for want of a market. Now that the highway links them with the outside world the people of Fort St. John hope that they will not see this again.

Its fertile farmlands have brought many people to the Peace River country in the past. Its oil may also bring them there in the future. For years seepages of crude oil, tar and natural gas have been reported at various places from the foothills of the Rockies to the Vermilion chutes, the series of falls and rapids below Fort Vermilion. Old-timers like Frank Beaton are convinced that the Peace River is an oil country.

"I know there is oil to the north of here," he told me. "Years ago, when I was factor for the Hudson's Bay Com-

pany here, an old Indian chief brought me a bottle of crude oil. I didn't give it a thought at the time, but since then I've heard of several places where oil has been found. Only two years ago my son and an Indian found a place where oil was welling out of the ground."

In past years many oil companies have tried to tap the oil which their experts believe lies below the fertile soil. Wells drilled around the town of Peace River produced a little oil. Other wells sunk at Pouce Coupe brought in a large flow of dry gas. At Commotion Creek the government of British Columbia has spent \$6,000,000 on drilling operations. Now the widespread search for oil in the northwest has brought geological parties to the Peace River Block. People at places like Fort St. John and Peace River are more excited over the prospect of oil being found in their districts than they were when construction of the Alaska Highway was begun.

"I heard of oil seepages around Norman Wells long before they found the oilfield there," one old trapper remarked to me. "With all kinds of stories about oil in this country there must be oil somewhere."

The Peace River country has other resources, too. At Smoky River there is a national reserve of 550 square miles of high-grade bituminous coal deposits, potentially one of the most important fields in western Canada. Exposed along the banks of the Peace River below Fort Vermilion there are beds of gypsum varying in thickness from ten to fifty feet and extending for fifteen miles.

If the Peace River Block were the only area tapped by the Alaska Highway, the millions of dollars spent on the road would represent only a fraction of the value of the natural resources opened to development. With the ra-

dium, tungsten and oil of the Mackenzie District, the gold, silver and copper of the Yukon and the gold, tin and antimony of Alaska, the northwest, of which the Peace River is only a part, is the treasure house of the continent.

Alaska Highway—Triumph of American Achievement

On the wall of a United States Army Engineers' office in Edmonton I saw this slogan pinned up: "The difficult we do immediately. The impossible takes a little longer." It is not perhaps an original slogan but none could be more appropriate, for in building the 1,600-mile Alaska Military Highway from Dawson Creek, B.C., to Fairbanks, Alaska, and now in extending it another six hundred miles to Nome, United States Engineer troops have accomplished what many held to be the impossible. It took them seven months and seventeen days to construct a pioneer road through a region where some believed a road could not be built. Their achievement was not only one of overcoming the physical barriers which for a century and a half tied the northwest to the persisting traditions of its past. Through their efforts the American and Canadian peoples gained a new conception of their own northern territories and learned that what had been depicted as a wilderness of swamp and bush could be transformed by modern engineering skill and planned development.

A few men had dreamed of building a highway to Alaska for years. One of them was Donald MacDonald, an engineer

who believed a road from the United States to Alaska to be a practical undertaking and presently, as Japan began to unfold its plans for world conquest across the Pacific, a necessity.

In Washington his persistent efforts to obtain consideration for this project gained for him little more than the reputation of being a fanatic. Senators and congressmen listened to this forceful gray-haired man who talked so earnestly of what construction of a highway would mean to Alaska and the United States, but few of them supported his proposals. In Alaska people were less disposed to question the judgment of the man who, as location engineer for the Alaska Road Commission, had built the Steese Highway from Fairbanks to Circle. They knew of the long trips he had made into the wilds, traversing on foot routes over which a highway might be built, and when he asserted that he had found a feasible route through British Columbia and the Yukon they did not dismiss his ideas as those of an impractical dreamer. But such a highway would cost millions of dollars. While the Alaska legislature made small appropriations to further MacDonald's work, it could not undertake to construct the highway itself. It was an international project beyond the resources and territorial limits of Alaska, with its population of only sixty-two thousand, whites, Indians and Eskimos; and until the United States and Canadian governments could be convinced that the highway was necessary, it would not be built.

Even in Alaska there was opposition to the highway. The cry was raised that if the highway were built Alaska would be thrown open to all the itinerant Okies and Arkies who would migrate there in search of new homes. It was contended that the best way to develop Alaska was to let it develop itself. These were the arguments of those con-

cerned in keeping Alaska closed, the steamship companies which controlled transportation and the commercial interests which found a profitable market in Alaska and did not wish to see the territory develop its own industries. They were calculated to appeal to the strong individualism of the older Alaskans, but they lost much of their force when Alaskans compared their own relative stagnation with the rapid progress being made in Soviet Siberia. Obviously, to let Alaska develop itself while denying it highway connections with the continental United States was synonymous with allowing Alaska to remain undeveloped.

Rebuffed time and again, MacDonald doggedly continued the work which had become the absorbing interest of his life. Delving into history, he discovered that in 1892 Tsar Alexander III of Russia had proposed an international railroad across Siberia and Alaska, a proposal revived in a report made to Tsar Nicholas II in 1900 and later discussed with the Tsarist government by E. J. Harriman, the American railroad promoter who wanted to build the railroad through Canada and Alaska. Long before Vice-President Henry A. Wallace suggested an international highway between the Americas and Asia and Europe, MacDonald envisaged it as a possibility and wrote to the Soviet government to find out what new Siberian highways might be linked at the Bering Strait with an Alaskan highway, as then unbuilt, to Nome.

Slowly the proposal for a highway to Alaska won support in the United States and Canada. In 1933, when a commission of engineers, appointed three years previously by President Herbert Hoover, reported favorably on construction of the highway, hopes were stirred that it might be built. Congress authorized the president to negotiate with the Canadian government but nothing came of the

negotiations. Then, in 1937, Japan invaded China and advocates of the highway were provided with a potent argument. As the Japanese armies marched deeper into China, Alaskans became conscious of the insecurity of their empty spaces behind mountain ramparts that were no barrier to planes. Other voices joined MacDonald's in urging construction of the highway. Businessmen in Pacific coast cities formed associations to promote it and labor organizations began pressing for it as a defense against Japanese aggression and a project which would absorb thousands of unemployed.

In 1938 President Franklin D. Roosevelt appointed a second International Highway Commission with Congressman Warren G. Magnuson as chairman and Governor Ernest Gruening of Alaska, former Governor Thomas Riggs and James Carey as members. The fifth member of the commission was Donald MacDonald. Hon. Charles Stewart, former premier of Alberta, was chairman of a similar commission appointed by the Canadian government, the other members of which were J. M. Wardle of the Department of Mines and Resources, Brigadier General T. L. Tremblay, Arthur Dixon and J. H. Spencer. Both commissions conducted extensive surveys of the several routes proposed for the highway and both favored construction, the American commission over the "A" route from Hazelton, B.C., to Whitehorse, Dawson City and Fairbanks, the Canadian commission over the more easterly "B" route from Prince George, B.C., to Dawson City and Fairbanks. Neither commission recommended the "C" route over which the highway has now been built.

But across the Pacific, Japan, even then preparing for war against the United States, had been following these developments closely. Alaska, defenseless and unlinked

with the great industrial centers of the United States, represented no insuperable obstacle to its plans. Alaska, supplied over relatively secure land routes, threatened its entire scheme with disaster. For decades this fear of encirclement through Alaska had haunted the Japanese general staff. At the Portsmouth Conference in 1905 at the end of the Russo-Japanese War this led it to exact an oral agreement that Russia would not attempt to construct its section of the Canadian-Alaskan-Russian railroad proposed by E. H. Harriman. And now that it seemed a highway might be built, the Japanese government quietly exerted its influence to halt it. Hirochiro Nemichi, the Japanese consul at Vancouver, B.C., until his recall in 1939, was instructed to fly to Whitehorse and make a direct report on the proposed highway to his government. At the same time the Japanese government entered a strong protest to the Chamberlain government at London stating that it would consider construction of a highway to Alaska as being inimical to Japanese interests. Whatever representations were made to Washington and Ottawa, the highway was not built—not then. It was built in 1942, a splendid compensation for the wasted years, when the fate of Alaska and perhaps of the Pacific coast depended upon its being completed in time.

Time. It is a word I hear everywhere along the highway. As we leave Dawson Creek at the beginning of April the breakup is not far off. The sun is warm, although there are still occasional flurries of snow and it freezes at night. But there are bare patches of rich dark earth in the snow-covered fields. Soon it will be spring.

Some are predicting that when the thaw comes the highway will be impassable for weeks. The Engineers do not

know how well they have built. They do know that some of the temporary wooden bridges will go out when the ice begins to move. But perhaps the highway will be impassable. They have to be prepared against sections of it being isolated by floods and slides. Nothing can be left to chance. Hence long convoys of trucks are rolling over the highway, where every day ruts cut deeper into the thawing surface and pools of water from the melting snow spread over the low places along the creek bottoms. Crippled trucks are being hauled off the "deadline" and taken to the repair shops. Gangs of men are working against time on the new steel bridges over the Peace, Sikanni Chief and Muskwa rivers. The days have suddenly become all too short for the work that has to be done. And in the camps the men are organizing pools on the breakup and hoping that "The Road" will hold.

We might be on any good graveled highway in the United States or Canada. It is wide enough at this point to take three lanes of traffic and it runs straight for miles out of Dawson Creek to Fort St. John. The snow of the previous night has provided a good surface and the poplars by the roadside are dusted with silver frost that glistens in the early morning sun. Every few miles we pass convoys of trucks and occasionally a busy little jeep scurries past us.

With me in the carryall are Captain Freeman C. Bishop, public relations officer attached to the Northwest Service Command, and Will E. Hudson, news cameraman for Pathe News.

Hudson tells us that this is like coming home again to him. And then he explains, as he has already explained to everyone we have met, that he was with the Harvard Museum expedition to Banks Island in 1913 and in Alaska with Sir Hubert Wilkins in 1926. His camera equipment piled

around him, he sits bundled up in a bright green flannel shirt, several sweaters and a parka, the fur-fringed hood pushed back from his white hair, and relates his experiences. They are as endless as the miles but they break the monotony of long hours of traveling.

"When we abandoned the *Polar Bear* fifty miles west of Herschel Island four of us walked from Demarcation Point to Fairbanks. The others wintered at Martin Point. It took us twenty-nine days to get to Fort Yukon and forty days to reach Fairbanks," he says, telling us about the Harvard Museum expedition. "There we were with \$15,000 in cash on us—"

We come to a muddy stretch and our driver changes over to front-wheel drive. For a few minutes we lurch over it. Then,

"—and we could not spend a dime of it. We were on short rations and the morning we got to Fort Yukon we ate the last of our food."

Long before we reach Whitehorse we have been on a vicarious tour of the north.

Our driver is Corporal-Technician Grover Kandel. Like most of the soldiers we meet on the highway he is young, only twenty-three years old. And he is a good driver. He tells Hudson, who wants to know where he learned to drive so well, that he was born in Canton, Ohio, and raised on a farm. He used to drive a milk truck, he says, and he has been over roads far worse than this. It is the first time he has made the trip to Whitehorse.

This first part of the highway has already been widened and improved by the contractors working under the United States Public Roads Administration, each of whom has a section of the permanent 36-foot-wide gravel-surfaced road to complete. Under the original plan, the army was

to build a pioneer road which the PRA could use as an access road in constructing the permanent highway. But within three months it became apparent that the permanent highway could not be completed by the end of 1942. The plan was abandoned and the six thousand men employed by PRA contractors were transferred to the pioneer road to begin improving it as a standard highway able to carry heavy military traffic. Canadian contractors are working on the permanent highway from Dawson Creek to Fort St. John, American contractors from Fort St. John to Fort Nelson and Canadian contractors again from Fort Nelson to the Liard River. From the Liard River to Fairbanks the permanent highway is being built by American contractors.

We pass gangs of men at work on new cuts to eliminate curves and reduce grades on the pioneer road and already stretches of the new road are in use. Between Dawson Creek and Fort Nelson alone the road is being shortened by seventy miles. Along the highway new camps for the workers are going up. Someone says that when the work is in full swing this summer some fifteen thousand men, in addition to army troops, will be engaged on the highway.

It is a far cry from the trackless wilderness of only a year ago.

When United States Army Engineer troops reached Dawson Creek and Whitehorse in the spring of 1942 they faced a formidable task. They had to construct sixteen hundred miles of military highway, most of it through unsurveyed territory, across rivers whose courses had not been traced and mountains where no passes had been explored. And they had to complete the road before the Japanese could secure a foothold in Alaska. Some said they

would do well to finish the survey in 1942. Others asserted that the muskeg would prove impassable.

Despite the bitter controversy created by the selection of the route after the American and Canadian commissions had recommended one or the other of the two coastal routes, once the decision to build the highway was made, no time was lost. On February 4, 1942, Brigadier General C. L. Sturdevant, United States Army Assistant Chief of Engineers, was instructed to prepare surveys and plans. On February 14 he received authority to proceed with construction of the highway. Five days later United States Army officers were conferring in Edmonton with James MacArthur, general manager of the Northern Alberta Railways, on arrangements for transporting equipment to Dawson Creek. On February 26 the agreement between Canada and the United States was signed. By March equipment was being moved over the Northern Alberta Railways line to Dawson Creek and from Skagway over the White Pass and Yukon Railway to Carcross and Whitehorse. On March 10 the first troops arrived at Dawson Creek.

Brigadier General William M. Hoge set up his headquarters at Whitehorse with two white regiments, the 18th and 340th, and one negro regiment, the 93rd, to begin construction of the northern end of the highway. At the same time, two other white regiments, the 35th and the 341st, and one negro regiment, the 95th, began work on the southern end of the highway out of Fort St. John, where Brigadier General J. A. O'Connor, then a colonel, had established his headquarters. With ancillary troops, some ten thousand officers and men were engaged on the greatest engineering project in the Americas since the completion of the Panama Canal in 1913.

At the northern end, the 18th Regiment reached Whitehorse on April 29. The 93rd and 340th regiments remained in Skagway to wait for their equipment until June. Then the 93rd moved to Carcross to start building the highway between that town and Teslin Lake and the 340th went to Teslin Lake to begin work on the road south to Watson Lake. In June, also, another negro regiment, the 97th, was moved from Valdez, Alaska, over the Richardson Highway to Slana. There it started work on the Alaskan end of the highway while the 18th Regiment built the road through the Yukon north of Whitehorse.

At the southern end, the 35th Regiment was the first to reach Dawson Creek and it proceeded immediately with its equipment over the winter trail to Fort Nelson to begin work out of there on the road to Watson Lake. At the end of April the 341st Regiment arrived at Dawson Creek to work on the highway between Fort St. John and Fort Nelson. The third regiment, the 95th, reached Dawson Creek in June and followed the 341st and 35th regiments, improving the pioneer road, putting in culverts and building bridges.

The one reason the Engineers were able to build the highway in one season, confounding all those who claimed it could not be done, lay in the achievement of the 35th Regiment in getting to Fort Nelson with all its heavy road-building machinery before the breakup. There was no road to Fort Nelson, 325 miles north of Dawson Creek. The road, such as it was, ended at Fort St. John. From there a winter trail, impassable after the thaw, ran to Fort Nelson, 265 miles away. Over this little-used trail the 35th had to take all its equipment, including twenty heavy diesel tractors and bulldozers, in temperatures falling sometimes to forty-five degrees below zero. It had to cross the Peace River on

a plank road covered with sawdust built over the ice. But by April 5 the last of its tractors, trucks and graders had been taken to Fort Nelson.

Even then the problem of supplying the regiment remained. When it ran short of fuel before the highway from Fort St. John was finished, a shipment of fuel oil had to be sent by rail to Waterways and by river and lake boats down the Clearwater and Athabaska rivers, across Great Slave Lake and down the Mackenzie River to Fort Simpson. From there it was sent up the Liard and Fort Nelson rivers to Fort Nelson, in all a distance of some 1,100 miles from the railhead at Waterways as compared to the 325 miles from the railhead at Dawson Creek.

While bulldozers were already starting to cut a swathe through the bush, a stereoscopic examination of overlapping aerial photographs revealed a route over the mountains unknown to any of the trappers and prospectors or the Indians. At first, after a study of the best maps of the territory available, the Engineers had thought that from Watson Lake the highway would have to swing south around Dease Lake, Telegraph Creek and Atlin to reach Whitehorse. This would have added nearly five hundred miles to its length. But this new direct route from Watson Lake to Teslin Lake was entirely in forest growth and in these latitudes forest growth does not thrive higher than four thousand feet.

"By knowing our trees we were able to follow the high ridges and avoid many of the muskeg areas," Colonel Albert E. Lane, the commanding officer at the Dawson Creek railhead, explained to me. "We studied the aerial stereo-pair photographs of the country and picked out the ridges of poplar and jack pine indicating the higher ground.

"Part of the route we selected for the road was unknown

even to the Indians. When the 35th Regiment reached the head of the Tetsa River the Indians shook their heads after they heard about the route we proposed to follow from that point. 'White man's way, two summers. Indian's way, one summer,' they said. They thought we should follow their trails. So we sent a party out with Indian guides to survey the route they suggested. They were gone all summer and they still had not reached their destination when we brought them out. In the meantime, the highway had been built."

Ahead of the construction crews went the surveyors, presently so short a distance ahead that the bulldozers caught up to them while they slept.

In Edmonton I talked with Harvey Maloney, who was a member of the first survey party over the route from Fort St. John to Fort Nelson in May, 1942. Maloney told me with a wry smile that he had gained some knowledge of road building during the three years he spent in a relief camp working on the Jasper Highway before the war.

"There were five of us in the party," Maloney stated. "The others were Don Ferguson, a civil engineer from San Francisco, Walter Polvi and Leo L'Heureux, both students at the University of Saskatchewan, and Keith Bothwell, a student at the University of Alberta. Two engineers, Lieutenant Charles Neesom, Jr., from the 648th Regiment, and Carl Shubert, from the Public Roads Administration, went ahead of us with three packers, old-timers from Fort St. John. Behind them came a party of soldiers under Master Sergeant Raymond Hallowell. The engineers blazed a trail for the soldiers to clear and we followed, a day or two behind. Behind us, at first a long way behind, were the bulldozers.

"We were supposed to take three months on the survey,

at an estimated three miles a day, but more often we covered only a mile or a mile and a half a day. The soldiers clearing the trail sometimes had to climb trees to get their bearings in the dense forests and the engineers and packers had to swim the Sikanni Chief River on horseback.

"At times we came upon old forgotten trails used by the fur traders. They were grown over with prairie grass probably seeded from the feed they used for their horses.

"One night, about six weeks after we started out on the survey, we heard the sound of bulldozers working in the distance and we sat around our camp speculating on how far sound would carry. It gave us a strange feeling for we had grown so used to the quiet of the wilderness. When we started out in the morning we could still hear the sound but it did not seem to be any closer and when we camped for lunch, about a mile and a half from the main trail, we couldn't hear it any longer. We were making our way back to the trail when suddenly we broke out of the bush onto a broad road where only that morning we had been running a line along the trail. The bulldozers had caught up with us and the end of the road was already out of sight over the ridge ahead. Hallowell grinned at me and exclaimed, 'Look at that. The army's right on the job.' That afternoon we ran our line along the road and covered as much ground in a few hours as we had in days before that."

Around noon of the first day we are winding down to the Peace River behind a long line of trucks carrying steel for the new bridge. Under the hot sun the broad expanse of river ice is dazzling. We cross on the planking of the low wooden bridge and wonder how many days it will be before the ice piles up and carries it out. The men working

on the new suspension bridge a few hundred yards up the river are wondering the same thing. The chatter of their rivet guns is carried across the ice to us.

The ice is strewn with equipment and the road across it is deep in muddy water through which the trucks splash their way. Cranes rear against the clear sky and on the north bank a steam shovel is at work excavating for an anchor tower. One 169-foot tower on the south side of the river is already in place on its massive concrete foundation and the men are preparing to erect the 199-foot tower on the north side.*

When we stop the carryall by the new bridge one of the men comes over to us and asks us if we want to see the superintendent. While Hudson is setting up his camera I go across the ice with him. He tells me that his name is Robert C. Knapp and that his home is at Richmond, California. He shows me his union card in Local No. 3 of the International Union of Operating Engineers at San Francisco. It is nothing new to him to be working in out-of-the-way places. Before he came here he was employed on a construction job at Pago Pago in Samoa. Many of the men here, he explains, come from Chicago, Seattle and San Francisco and the riveting gangs are from New York and Lake Charles, Louisiana.

"We're doing our bit for the war effort right here," he says. "We're really working against time now. We don't like to see this sun out too long. By seven o'clock tonight we'll have the first section of this second tower up. I've got a bet with my boss that we'll have the whole thing up inside of three days. Then the river can go out when she wants. But we want to get off that ice before she goes."

* The Peace River bridge, built at a cost of \$1,000,000, was officially opened on August 30, 1943.

He points to the crane tower. "There's two hundred tons of steel there we don't want to lose."

Oscar Parker, the steel superintendent, who comes from Trenton, New Jersey, informs me that the main span will be 930 feet long. There will also be two side spans of 165 feet and two more approach spans of 135 feet. He says that the men have broken all records by erecting the first tower in three days.

"On a similar job at Maysville, Kentucky, we took four and a half days, so we've clipped a day and a half off the regular time. And," he adds, "we'll have the second tower up in two days."

When we cross the Sikanni Chief River at dusk the night shift is working on the new trestle bridge. It is starting to snow, but the work goes on. We are driving at night because we have spent most of the afternoon in Fort St. John and the army camp which is our destination is 157 miles north of that town. Ahead of us the lights of northward-bound convoys sweep the darkness and every so often other lights rush at us, filling our little horizon beyond the half circle of the windshield. But presently all the convoys are behind us and there is only the white road stretching interminably through the curtain of snow. When we reach the camp it is midnight.

It is still snowing as we leave in the morning, but by the time we reach Fort Nelson the sun is again blazing down from the pale northern sky and what was a good road surface when we started out has become slippery and treacherous. Around one bend we come upon two trucks in a ditch. Their drivers stand by the roadside waiting for the wrecker and one of them yells at us, "Watch it. It's slippery." We feel the wheels of the carryall slithering on the polished snow, but Kandel's skillful driving pulls us out of

the skid and we go on without stopping. Not far away men are spreading gravel on the road.

Fort Nelson is the last settlement we shall see until we get to Lower Post at Watson Lake, 335 miles away. Until the airfield was built it was like many another isolated post in northern British Columbia, a mere name on the map. It is a busy spot now. Across the Muskwa River the concrete foundations for the new bridge rise above the giant poplars on the bank. Scores of trucks stand in the clearings around the army and contractors' camps at the new settlement of Muskwa nearby. Carpenters are building a new PRA hospital and putting up still more shacks and bunk-houses. Army engineers have struck a large flow of dry gas while drilling for water and plan to use it for lighting and heating. Copper wire gleams against the green of the spruce trees where linesmen are stringing the new telephone line which soon will run the full length of the highway. And westward and northward, where the muskeg was said to be impassable, the trucks roll over the highway to Alaska.

Between Fort St. John and Fort Nelson and as far as Steamboat Mountain beyond Fort Nelson the muskeg presented the Engineers with one of their most difficult construction problems. By following the higher ground to the west of the old winter trail to Fort Nelson they could avoid most of the muskeg. But at times there was no way around it. They crossed it by using corduroy, which is simply a roadbed of logs laid on top of the swamp and covered with earth. Sometimes they built their road and it sank slowly into the spongy bog of moss, peat and silt as the muskeg thawed. Then they had to put a second layer of corduroy on top of the first and perhaps still more layers until they

obtained a firm foundation for the road. On one stretch fifty miles from Fort Nelson the 35th Regiment had to build two miles of corduroy road.

"We had no previous experience in road building in the north to go on when we started work on the road," Colonel Lane said to me. "The Russians have built roads through similar country but we had no accounts of their experiences. All we had was an article on road building in Alaska which was written in 1917 and published in Hager and Bonney's *Highway Engineer's Handbook*. This advocated the cleaning out of all muskeg areas. We learned from our experience, however, that while this could be done effectively where the muskeg was shallow it was better to build on top of the muskeg where it was deep. We laid corduroy and dirt on top of the muskeg, continuing to fill as the muskeg thawed and the road sank into the slime. In some particularly bad spots we had to use as many as eight layers of corduroy and dirt."

Mud was another problem. The 35th Regiment made little progress for weeks after it reached Fort Nelson because the heavy rains turned the ground into a quagmire. At Charlie Lake, where the 341st Regiment was starting on the highway north from Fort St. John, vehicles bogged down in the mud and construction work was brought to a standstill. Men and equipment were ferried up the lake to begin building on the higher ground at the north end. This effort to avoid a delay of weeks when every day was precious cost the lives of twelve men. A pontoon boat ferry carrying two officers and fifteen men capsized in a sudden squall. Dressed in their heavy winter clothing the men had little chance to swim in the icy waters of the lake and the officers and ten of the men were drowned. The other five soldiers were rescued by Gus Hedin, a trapper, who wit-

nessed the accident and put out in his skiff to pick them up.

They were not the only soldiers and civilians to give their lives. Several men were killed in accidents caused by bad fills giving way. Others froze to death before they were found. A few died from carbon monoxide gas poisoning while sitting in the cabs of their stalled trucks waiting for assistance. But the highway was built.

The soldiers who built it were not expert construction workers. Most of them had spent only a few months in training camps before they were sent to the northwest. Before that they were mechanics and farmers, clerks and students, a cross section of American youth. To many of them, and particularly the negroes, Canada was an unknown country and names like Fort St. John and Teslin meant nothing. They were not pioneers by choice but by the stern necessity of war and the majority of them came to hate the country. They hated it because of the loneliness of their camps in the wilderness and the monotony of the work, with only such recreation as they could devise for themselves to relieve it. They hated the rain and the mud and when the rivers froze they hated the cold and the snow. They wanted to get back to the bright lights of a familiar city, to see their families, to jostle with the crowds along busy streets and sit in the corner drugstore with a girl.

Never had these little things seemed so important. They talked about them in their tents at night when letters from home were read and snapshots handed around. And sometimes they discussed the war. This was the war, they told themselves, but the front seemed so remote across endless miles of forests and mountains. They talked mostly about Japan because the Japanese were already entrenched on Attu and Kiska and this road they were building led to

Tokio. For the same reason they talked about the Soviet Union and China because this road was a supply line across the Bering Strait. Their prospects of obtaining leaves and of being transferred to a fighting front were linked to construction of the highway and they worked day and night to finish it, ramming their bulldozers through the shallow-rooted trees, wading in icy rivers to build their bridges, hacking a path and hauling their machinery over it.

They learned to adapt themselves to the primitive conditions and to improvise when they ran into difficulties. When machines broke down and new parts could not be had they made their own parts. When trucks could not get through the mud they built sleighs to carry their equipment. When supplies ran short the advance parties lived on the moose and caribou and the game birds they shot. By overcoming the innumerable difficulties of supply they ensured the success of their work.

One of these men who built the highway was Master Sergeant George H. Burke, with whom I talked at Dawson Creek. Like most of the negro soldiers he was hoping he would be transferred soon, but he was proud of having helped to build the highway, on which he worked as an electrician. He told me that he was born at Washington, D.C., in 1914 and studied electrical engineering at Howard University for two years before he went to work as a projectionist in Washington theaters. He joined Local 224 of the International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators and was later elected as a trustee. The union, he said, was keeping his dues paid up. He was also a member of the National Association for Advancement of Colored Peoples. He was drafted in July, 1941, and sent to Fort Belvoir to join the

95th Engineer Battalion. After participating in maneuvers in South Carolina, during which he was promoted to corporal, his battalion went to Fort Bragg as the 95th Engineer Regiment and there he was promoted to staff sergeant.

"I was in charge of freight loading at Fort Bragg and the first I knew of our destination was when I was ordered to have 'Dawson Creek, B.C.,' stenciled inside the boxcars. I had never heard of the place before and when I looked at the map I had it confused with Dawson City," Burke said. "We were on the train six days before we got to Dawson Creek and at all the little towns along the way the people came out to meet us. It made us feel pretty good. From Dawson Creek we went over the road to Fort St. John to start work at Charlie Lake. The road was in bad shape. The truck I was riding in overturned outside Fort St. John and I finished the trip by walking into the town.

"We had had some practice in road building at Fort Bragg but we were green hands when it came to handling heavy equipment. At Charlie Lake we were held up for weeks by heavy rains and we began to think we would never make the first four miles because we couldn't get our drainage work done. The mud became so bad that our trucks got stuck and then we had to walk. We worked twelve and fourteen hours a day in the rain and the flies and mosquitoes made life miserable for us, particularly in the open mess camps. We didn't like it at all. We had hardly any free time and most of what we did have we spent playing cards and pitching horseshoes. Sometimes we showed a film, when we could get one, and then I operated our 16-millimeter projector.

"Units of the 341st Regiment were ahead of us and we worked to keep up with them. They slashed the pioneer road and cleared it with bulldozers and we followed be-

hind them, doing the grading, building the bridges and putting in the culverts, often eight and ten to a mile. Sometimes, after the road had been built, changes would be made and we would have to go over it again. We worked in companies, each with ten or fifteen miles of road to build, and we pushed the 341st so hard they skipped a section of the road altogether and left us to build it.

"Two of our units built the bridge over the Sikanni Chief River. The engineers estimated that it would take two weeks but we undertook to do the job in four days. We did it in three and a half days by working thirty hours at a stretch.

"When we first started to work on the highway at the beginning of June we were told that we would only go as far as Fort Nelson. But when we got to Fort Nelson at the beginning of October we were ordered to improve the road to Watson Lake. There was already snow on the ground, the weather was bitterly cold and we were still living in tents. All of us were disappointed because we had hoped that when we had completed our section of the road we would be transferred back to the United States. We got busy, set up our own sawmill to cut lumber for a camp and started work on the new section. By this time we had learned a lot about road building, and improving the road the 35th had already built was not as difficult as building the road to Fort Nelson. However, we were all glad when the job was done."

Sergeant-Technician Robert H. Bowe was another of the men who built the highway. When the Japanese attacked Pearl Harbor he was studying business administration at the College of St. Thomas, St. Paul, Minnesota, and preparing to enter the wholesale grocery business. He waited until the semester ended in January, 1942. Then

he enlisted. After two months at the engineer replacement training center at Fort Leonard Wood, Missouri, he went to Fort Ord, California, to join the 341st Engineer Regiment. In April, 1942, the regiment was ordered to Dawson Creek to start building the highway from Fort St. John to Fort Nelson. Bowe worked on the highway until August. By this time he was a private first class. Then he was transferred to the Fort St. John headquarters. In September he and Corporal Otto Gronke, since promoted to staff sergeant, drove the first truck over the highway from Dawson Creek to Whitehorse and later to Fairbanks.

"We started out on September 23, driving a weapons carrier with a load of mail and baggage," Bowe told me when I saw him at Whitehorse. "The road was still far from being finished and there were few places where we could drive in high. We had to use low gear most of the way.

"The morning of the day we drove through, two bulldozers working from opposite ends of the road had met a few miles east of Lower Post. One of them was driven by Corporal Refines Sims, a negro, and the other by Private Alfred Jalufka. We met some of the negro boys from the 93rd walking down the road. They had come over the railroad from Skagway and they had little idea where Dawson Creek was. They could hardly believe that the road was actually through. 'You mean we-all can get right back home now?' one of them asked us when we told him we had driven from Dawson Creek.

"We got to Whitehorse on September 27. We had been driving fourteen hours a day for five days, from early morning until dark, and we were pretty tired. We stayed at Whitehorse and attended the official opening ceremony at Kluane Lake on November 20. Then we drove on to Fairbanks. When we hit Fairbanks we were like a couple

of boys from the country seeing the big city for the first time. After being so long in the bush we wandered around it as though it were San Francisco.

"Gronke and I would like to be the first to drive through to Nome when the road is built. And if we could we would like to go all the way through Russia. I never thought much about Russia before, but since I came up here I've been wanting to see the country for myself."

Fifty miles beyond Fort Nelson we begin to climb into the foothills of the Rockies, around Steamboat Mountain and above the lovely Tetsa River valley. It is a magnificent sight. Far below is the broad valley, its dense forests overflowing the brim of the hills. And above this green flood rise the decks of Steamboat Mountain. The highway is a thin line below the brim and the trucks are mere specks moving along it.

The pioneer road was built over the top of the mountain, but the grades were so steep that some of the drivers became scared and jumped from their trucks, letting them go over the mountainside. The new road around the mountain has easier grades, but now, we find, the road surface is like glass. A big diesel truck has crashed through a narrow bridge into a creek. The driver stands ruefully by the roadside. Farther on another truck has overturned, spilling its load of oil drums over the road. It has caught fire and lies, charred and smoking, in a cleared space a little way down the hillside.

On the hill above Mills Creek two six-wheeled trucks have slid backwards into the ditch, blocking all traffic. We stop the carryall and get out, although there is nothing we can do to help. Behind us the line of traffic grows longer every minute, trucks, jeeps, autos and a big rotary snow-

plow. At the foot of the hill another line of traffic forms. Nothing can pass until the trucks have been hauled out and no one, it seems, can move them. The motors race and the big wheels churn the snow, but the trucks are still in the ditch. There is a small crowd standing around and offering advice now, two lieutenants, several sergeants and corporals and a score of privates and contractors' men. Other drivers just sit in their trucks and wait. They are used to this. "I've already skidded three times on this hill today," one of the contractors' men remarks.

Then a dump truck is brought up from the camp below. It crawls slowly up the hill with men flinging gravel under its wheels as it goes along. "Dump your load here," shouts a tall bearded man in a red mackinaw to the driver. Cautiously the driver maneuvers his truck on the slippery hillside and dumps his load by the first of the ditched trucks. A second truck comes up and dumps another load. Finally the truck lurches forward, slips back again and then, as its wheels snatch at the gravel, heaves itself out of the ditch. Now the second truck can be pulled out by a winch truck.

We get back into the carryall. But, a little way behind us, the driver of a tank truck has been changing a tire. As we watch, he jumps backwards and the truck slides slowly off the jack. The road is blocked again. When we look back across the creek there is still a long line of vehicles behind the tank truck.

Perhaps an hour later we pass the Greyhound bus. There is a blur of faces as the passengers look curiously down at us. Splashed with mud and with dents in its sides, it is still the familiar sight we would expect to see on any other highway in Canada or the United States, but not on this. It is one of twelve which started carrying soldiers and work-

ers over the highway in March and more than anything we have seen yet it impresses us with the fact that Alaska and the Canadian Northwest are no longer isolated from the rest of the continent.

"The sign on that bus said Dawson Creek," Hudson remarks to me. "One of these days there'll be buses running between New York and Nome, maybe between Buenos Aires and Moscow. I'd like to make that trip, wouldn't you?"

In the years to come tourists will drive over the Alaska Highway and marvel at the beauty of Summit Lake, one hundred miles from Fort Nelson, and Muncho Lake, seventy miles beyond. But to the men stationed there Summit Lake is one of the loneliest places in a lonely country. One soldier points to the encircling mountains and the tree-fringed lake and says to us, "Sure, it's a beautiful spot. Maybe after the war I'll take a trip back here. Maybe there'll be a hotel here then and I can sleep between sheets in a real bed. But right now I'd give the whole goddam country for Times Square."

Summit Lake is one of the control points on the highway where trucks are serviced and checked. Two young lieutenants in the Corps of Quartermasters, both from Virginia, are in charge and we are struck by the quiet efficiency with which they keep the convoys moving day and night. Drivers climb wearily down from trucks caked with mud and mechanics work on broken springs. There is no need for us to ask what the road up ahead is like. Splashing through huge puddles and grinding in low gear over the muddy flats of McDonald Creek in the morning, we find out for ourselves. After a while we climb again above the valleys of the Racing and Toad rivers to cross to the Liard River, but the road gets no better. In places, where rocks

have fallen from the banks, it is barely wide enough for us to pass and on the few level dry stretches there is already dust on the snow by the roadside. The important thing, however, is not that the road is bad but that it is still carrying heavy traffic at a time when many asserted it would not be passable.

Lower Post on the Liard River has changed little, although supplies which used to be brought in through Wrangell, Alaska, to Telegraph Creek, B.C., and up the Dease River now are brought over the highway. The camp and airport are at nearby Watson Lake and no new buildings have been erected beside the Hudson's Bay Company's whitewashed log store and the few Indian cabins there. Now, however, the store has new customers. Behind the Indian cabins two army trucks are parked and when we go inside the store to talk to Jack Stewart, the factor, half a dozen soldiers are there, looking for gifts to send home.

It is a typical northern trading post, selling everything from cigarettes to straw hats. On one shelf are the gay print cotton dresses favored by the women among the fifty-odd Indians around the post. On another are piles of untanned moccasins. Hanging from the rafters are ermine pelts, priced from fifty to sixty-five dollars, and red fox pelts, at twenty-five to forty-five dollars each. The soldiers finger them speculatively, and one of them, a red-haired lad with bright blue eyes, tells us with a touch of envy that when the first soldiers entered the country some of the Indians were fascinated by the tractors and offered furs just to be allowed to ride up and down the road on them. But tractors are now a common sight and the soldiers have to buy their furs.

Stewart, who was born in Scotland and has been with the company for twenty years, shows us the old post with its

warped jack-pine shingles and hewn fire-killed logs. After close on a century it is still sound. Even the iron hinges for the door were made by the Hudson's Bay Company's men who built the post. Still stuck to the walls are fragments of old papers, among them the *Scientific American*, dated May 22, 1880, which is described as "the most popular scientific paper in the world," and the *Canadian Illustrated News* of May, 1881. There is also a small stock of old-type sulphur matches, part of a supply brought in during the gold-rush days, left in the store. Stewart gives them to the soldiers for souvenirs.

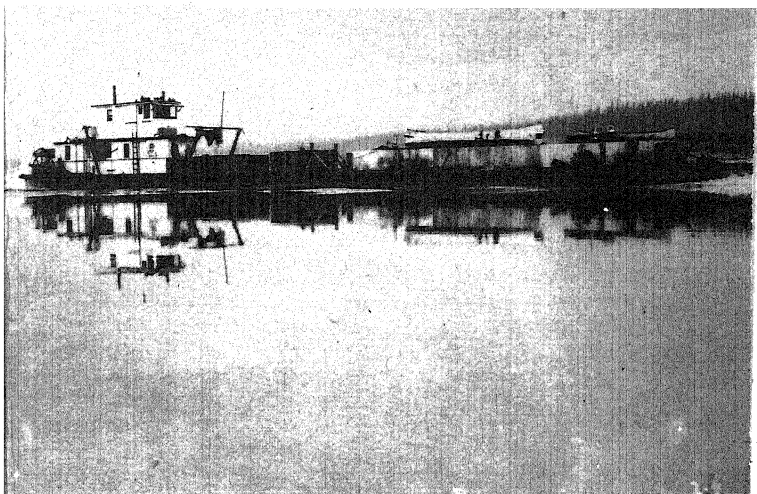
Hudson wants to take some shots of the Indians, so we go into one of the cabins, stooping to pass the low doorway and straining our eyes in the dim light. Beyond a bed in one corner and a stove in another there is little in the place. The woman sitting on the bed regards us apathetically, but the eyes of the boy beside her are bright and full of curiosity. Two men are bent over some pelts laid out on the floor, marten and lynx. Hudson asks them what the trapping was like this winter and one of them replies laconically, "No good. Too cold." Afterwards I ask Stewart what effect the coming of the highway will have on the lives of the Indians. "It won't affect them much," he says quickly. "Some of them may go to work on the highway, but they won't stick at it." But his voice lacks conviction. The Lower Post is no longer isolated, in touch with the outside world only through the Hudson's Bay Company's private commercial transmitter which Stewart operates. The highway is only the beginning of many changes to come and none will feel the effect of these changes more than the Indians. Soon the life they know will no longer be possible and they will be ill equipped for any other. Unless they are helped now to adapt themselves to the changing scene their lot,

poor enough now, must become worse. Stewart knows that what affects the Indians will affect the post and obviously he is thinking of this when he states, "In the long run I think the highway will be more of a hindrance than a help to us. It will bring tourists flocking in here after the war and change the entire country. I saw what it was like last year. There were forest fires raging along the highway as far as Fort Nelson."

Mrs. McClerry, the wife of Robert McClerry who runs a store at Teslin, Y.T., two hundred miles from Lower Post, looks at the highway in a different light. A slender, gracious woman, one of the five white women in Teslin, she and her husband have lived in the Atlin and Teslin districts for twenty-three years. "Of course," she says, "we are sorry in a way. We used to be so remote from everywhere and knew everybody in the country. Atlin was the nearest town and it was eighty miles away. Now many Atlin families are moving over here and to Whitehorse and the country is full of strangers. Teslin hasn't changed very much yet, but we realize it will never be the same place again. This country will really go ahead now."

When I first went to Teslin in 1933 it lay far off the beaten track. To reach it I had to walk the eighty miles from Atlin, following a trail so little traveled that most of the way I had to use snowshoes. Except for two brothers named Lemieux who ran a muskrat farm halfway between Atlin and Teslin, I met only one person on the trail, Mrs. McClerry. With her two infant daughters bundled in furs on a dog sleigh she was going over the trapline she and her husband ran.

Mrs. McClerry tells me, now, that they have given up the trapline since the highway was built. They expect Teslin Lake to become a tourist resort and they are building a

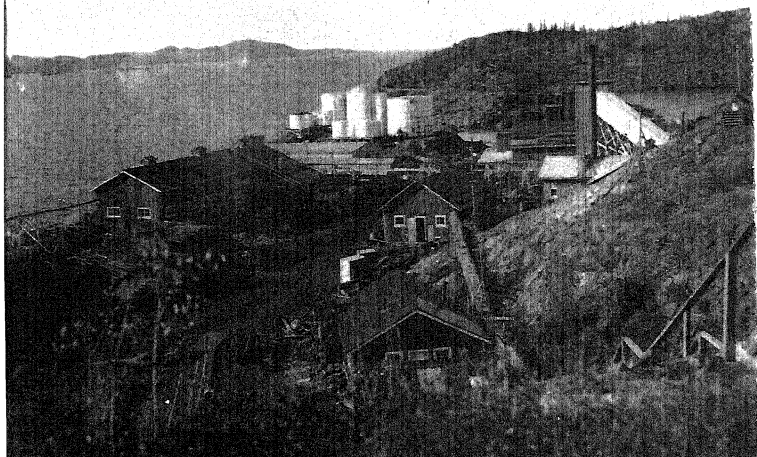


Department of Mines & Resources Photo

Stern-wheeler with Oil Barge on Bear River

Eldorado Gold Mines, Great Bear Lake

Department of Mines & Resources Photo





Aklavik in the Mackenzie River Delta

Three Modes of Transportation in the Far North

National Film Board Photo



hotel, the Nisutlin Bay Lodge, with accommodation for twenty people, and putting up cabins. While the highway was under construction they ran a dining room, serving six thousand meals to PRA workers. Their two daughters, Joyce, who is sixteen, and Betty thirteen, worked in the dining room and since they were the only two white girls for hundreds of miles Teslin was a popular place. "They're at school in Vancouver now," Mrs. McClerry says, showing me their photographs, "but they want to come back this summer."

Teslin is no longer remote. Below the little settlement a bridge is being built across the narrows to replace the ferry established when the highway was first built. At Morley Bay, seven miles away, the road is being pushed farther into the mountains toward Norman Wells. Before the highway came through, Whitehorse could be reached in summer only by a devious water route which the 340th Regiment used to take its equipment to Morley Bay. Now, in less than twenty-four hours after we leave Teslin, we are in Whitehorse.

"We have kept the traffic moving over the highway every day this winter," Major Compton, in charge of transport maintenance for the Northwest Service Command, told me at Whitehorse. "In ordinary times when the temperature falls to sixty and seventy below, all transportation comes to a standstill, but these are no ordinary times and we had to keep operating."

"At seventy below lubricants become solids, although lubricants have now been developed that remain fluid at this temperature. Grease used under normal winter conditions congeals so that motors can't be turned and wheels lock. Take a can of undiluted prestone, cut the tin away

and there's a solid block. We found sixty percent prestone to forty percent water better than undiluted prestone under these extreme conditions. This mixture becomes slushy at seventy below but the undiluted prestone froze solid at forty-five below.

"Before we had heated shrouds to put our vehicles under, it was more difficult to keep them operating. When they froze we had to thaw them out by placing a smoke pot under each differential. The shrouds have helped us to overcome that problem. They have heaters run directly off the fuel tank of the vehicle itself, both gas and diesel operated, and they make it easier to prevent the vehicles from freezing. We also hope that by underground storage of gas and use of larger gas lines we shall have less trouble with blocked gas lines. Until now our gas has been brought up in drums. Ice particles remaining in suspension in the gas often blocked gas lines, which then had to be thawed out with blow torches.

"Operating trucks at low temperatures is less of a problem than keeping them in operation. With a smooth hard-packed surface of snow, trucks can roll right along, although loading has to be checked carefully to prevent metal fatigue. Fortunately, the temperature seldom remains at seventy below for more than a day and then we just maintain an emergency service.

"Control stations have now been established every hundred miles along the highway, with road patrol and wrecker service between stations, so that wrecked and stalled vehicles can be picked up and towed in for repairs within twenty-four hours. We are also establishing a system of relay stations at which mechanics can inspect vehicles every hundred miles. This will help to cut down

delays, reduce accidents and speed up the whole flow of supplies to Alaska."

The Alaska Highway might well be described as "an enduring monument of engineering skill and patient toil." These were the words used eighty years ago by a colonial newspaper, the *British Columbian*, in commenting on the Cariboo Highway, with which the Alaska Highway will be linked when the connecting road is built from Prince George, B.C.

In 1862, a detachment of Royal Engineers, 5 officers and 159 noncommissioned officers and men commanded by Colonel Richard Clement Moody, came out from England around Cape Horn to what was then the young colony of British Columbia. Between 1862 and 1864, working with wagons and picks, they constructed the Cariboo Highway, 485 miles from Yale, the head of navigation on the Fraser River, to Barkerville in the newly discovered Cariboo goldfields. They surveyed the route and constructed sections of the road, while other sections were built by private contractors. It took one unit of fifty-three men from May to November, 1862, to build six miles of road from Yale to Pike's Riffle. Between May and November, 1942, working with trucks and bulldozers, ten thousand troops built the entire sixteen hundred miles of the Alaska Highway at an average rate of three miles a day, a road-building achievement unparalleled in history. And perhaps, as most of the men of the Royal Engineers did, many of the American soldiers who built the Alaska Highway will return as settlers to help in the development of the new frontier opened through their toil and perseverance.

the temporary ramshackle buildings of an army camp. And since there was little order to begin with, the effect has been to recreate a new and different disorder in a setting that once knew all the sprawling confusion of the gold-rush days.

Rows of cylindrical steel Nissen huts and olive-green tents stand on the outskirts of the town just beyond the last tumble-down cabins. There are more tents and shacks under the jack pines and in the bush. Vacant grounds are piled high with boxes of K rations and all kinds of salvaged equipment. At the hotels men are coming and going all the time and there is never any room. Finding a place to sleep is the first concern of men arriving in town. Even the dogs can no longer sleep on the streets undisturbed.

The town, built on a bench above the river and hemmed in by sidehills, is cramped for space in which to expand. At McCrae, seven miles south of Whitehorse on the Alaska Highway, a new townsite is being developed. At first there was some talk that it would be planned for ten thousand people. This figure, however, has been reduced to twenty-five hundred, but, as one official explained to me, "Nothing up here is ever certain until it is actually done and even then it may be altered."

Everywhere there are soldiers and men from the various projects, Americans and Canadians. They wander around Whitehorse with cameras in their hands as the tourists used to do, although the pictures they take reflect a scene that changes from month to month. They crowd into cafés. They stand in line outside the government liquor store when the word goes around that another shipment has come in. They stand in line again outside the one shabby picture house. And when there is nothing better to do they just stand around on the wooden sidewalks.

This is all Whitehorse has to offer men on leave, but it is still a town to the men in the bush and somewhere to go.

Whitehorse had its beginnings in the turbulent days of the Klondike gold rush, but not as a gold-mining center. The gold-crazed thousands who fought their way over the Chilkoot and White passes did not come in search of land and they had no thought of settling. Their one idea was to reach the Klondike. So they established their cities of tents and shacks wherever transportation difficulties forced them to pause along the trail. They landed at Skagway and left a crowded port behind them. They halted again at Dyea, preparing to climb the Chilkoot Pass, or at White Pass City, if they chose to go over the White Pass, and new cities sprang up to meet their needs. At Bennett they built their boats and rafts to cross the lake and begin the long trip down the Lewes and Yukon rivers to the Klondike. Of all the hazards on these rivers Miles Canyon was the greatest and at the lower end of the canyon they paused again after shooting the white waters of the rapids. Here the old town of Whitehorse, on the east bank of the Lewes River across from the present town, came into being, a town of some twenty thousand transients. To some hundreds of these it became home when the rush to the Klondike ended.

Within a few years, Dyea, White Pass City and Bennett were ghost cities. Whitehorse would have followed them except that it was the northern terminus of the White Pass and Yukon Railway, completed in 1900, and the head of navigation on the Yukon River for the British Columbia and Yukon Navigation Company. Fire destroyed it in 1905, but it was rebuilt, dependent for its existence upon trans-

portation in a territory where only a few thousand people were left. And this meant dependence upon the railroad. A road was built connecting it with Dawson City, but the railroad was the only means of reaching the "outside."

For a few years it was the center of a copper-mining industry with as many as five hundred men working in its mines, the Pueblo, Copper King, Grafter, Valerie, Anaconda and War Eagle. The Pueblo alone employed two hundred men, shipping two hundred tons of ore daily for some time. But the cost of transportation restricted the output to high-grade ore and the industry could not survive falling copper prices. The mines closed down, not because they were worked out but because they could not be worked profitably.

Whitehorse had no gold like Dawson City and no silver like Mayo. With its one mining industry closed down, it turned to the tourist trade. Parties going to Kluane Lake and to the White River and Pelly River districts to hunt bear, moose and caribou, mountain sheep and goats, outfitted there and it became the main tourist center between Skagway and Dawson City. With the tourists came seasonal workers and the town's population swelled. In the winter when they were gone again three or four hundred people remained, those content with things as they were and those who strove to change things, clinging to their faith in the future of the territory. Tom Kerruish and his wife were two of those whose faith in that future never wavered.

"I've been waiting forty years for this and the only question I ask is why it couldn't have been done years ago," Tom Kerruish said to me. We were sitting in the pleasant

living room of the little house where he and his wife spend their winters when they come in from their placer mining operation at Lake Creek on the Big Salmon River.

"When I first came to the Yukon in 1905 Whitehorse was still a boom town, although the boom was running out. This, you might say, was the end of a long trail for me. I left Ramsay in the Isle of Man in 1892 to go to the United States. I was only a boy of nineteen then. I worked for a time in the mines at Butte, Montana, and after that I went to Rossland, B.C. In 1903 I decided to go to Alaska and I came to the Yukon two years later. Now, like most of the men who stayed in the country and tried to build it, I'm getting along in years. At one time or another I've been in charge of operations at every important copper mine around Whitehorse, but there's no copper-mining industry here now because this country has been held back. Yet, if all this development had come even ten years sooner, the Yukon would have been a great mining country by now and able to make a big contribution to war industry.

"I've always claimed that the area from Windy Arm to the head of the White River is the treasure house of the Yukon. It's got every kind of mineral—gold, silver, copper, lead, and millions of tons of coal. People think that this country has been widely prospected. It has, but only in a superficial way. Most of the prospectors were looking for gold and they weren't interested in other minerals. They figured that even if they found a good showing of copper or lead they couldn't work it so far from transportation. These new roads will make a tremendous difference. I know of one place in the Dezedeash country where there is the finest showing of copper I've ever seen, but it's always been too far away for development. Now this new road from Haines will go within a few miles of it.

"This country will have to depend on mining. If it's properly developed it can support a large population. But it will need men with courage and imagination. What takes a prospector over the next hill? It's imagination; the thought of what he may find there. Men don't have to go out into unmapped country trusting to luck any more, but even with good maps and plane transportation it still takes imagination, that and good geological training."

Mrs. Kerruish suddenly looked up, peering over the top of her glasses at me. "I'm a miner, too," she declared. "I can work in a mine as well as any man." Perhaps my expression conveyed some impression of doubt. She had already told me that she was born near Salem, Oregon, sixty-four years ago, and it was hard to imagine her working in a mine.

"Yes," she said, making slow careful stitches all the while she talked. "I can do anything in a mine, singlejack or doublejack, except blasting. And I'm just as good a placer miner as he is. In 1918, after we were first married, I helped him to prepare three hundred tons of copper ore at a property we had at Quadra Island off the coast of British Columbia. He broke the rock and I turned steel for him."

"And she can shoot, too," Kerruish interjected. "Anything she aims at is in the pot."

"I've traveled hundreds of miles by dog team in this country," Mrs. Kerruish continued. She spoke almost impersonally. "We've been working at Lake Creek since 1931. Once a year we bring in our supplies by dog team from Hootalinqua. I've made the trip alone twice."

"It's not a big placer operation," explained Kerruish, "but we've been able to make a go of it for the past twelve years. There's some fine farming country around there, too. Few people think of the Yukon as having any farming coun-

try, but some sections of it are as good as any I've seen. Where we are we can look out over the south-fork flats of the Big Salmon River and I have said to Mrs. Kerruish many a time, 'Twenty-five years from now you'll see farms down there.'

"We grow all our own vegetables—potatoes, peas, celery, cabbage—and we raise fine tomatoes under glass," added Mrs. Kerruish.

"Another good farming country is the Nordenskiöld River valley," Kerruish continued. "When the Trans-Canadian-Alaska Railway is built it will help to open up that district, just as the Alaska Highway has already opened up the Kluane Lake district, where there is more good farming country. But the mining industry will have to be developed before there is any real market for farm products.

"The fur trade in the Yukon has been on the decline for the past five years. Ten years ago the Indians used to come in here with ten to fifteen thousand dollars' worth of furs. In Teslin only two of the hundred and sixty Indians there went trapping this winter. Of course, some of them went to work for contractors instead, but that doesn't alter the fact that the fur is becoming harder to get every year. In the west, industry and farming replaced the fur trade. Here, unless the mining and oil and perhaps the pulpwood industries are developed, there is nothing to take its place."

Throughout the Yukon I found people confident that new mining development will follow the rapid extension of communications. Their future depends on it. The opening up of the territory will lead inevitably to the final decline of the fur trade, which even before the building of the Alaska Highway was growing smaller year by year.

"The values are increasing but the quantity is decreas-

ing," William S. Drury, a partner in Taylor and Drury, whose headquarters are in Whitehorse, told me. "Where the Indians used to bring in one hundred fox furs and receive six hundred dollars for them they now bring in fifteen and receive three hundred. Trapping is much heavier now than it was in the old days. The Indians used to take only what they needed, but commercial trapping tends to clean out the country."

Scientific control can preserve the fur trade on a limited scale, but the day when the fur trade was still the dominant economic factor in the Canadian Northwest, its last stronghold, is gone. It was already passing before the war. The new projects are completing the process begun half a century ago when gold was first discovered in the Yukon.

In Whitehorse the people believe that the future of their town, which for so long had only a past, is assured. Its position as the northern terminus of the 110-mile White Pass and Yukon Railway, which has been leased by the United States Army for the duration of the war, has led to its becoming one of the three main centers on the Alaska Highway and an important point on the air routes to the Orient. The completion of the oil pipeline from Norman Wells and the construction of a refinery at Whitehorse will give the town another industry. Whitehorse has been infused with new life, but I found it still the pioneer town it was when I was there ten years ago.

With a population swollen in one year to between five and six thousand, it was not only housing that was unsatisfactory. The town still had no water system. Army engineers were drawing on a well supply for their own and PRA camps, but the townspeople were still buying their water, hauled from the Lewes River above the town, at five cents a bucket, as they had done for years. In the

Whitehorse Café there was a notice: "No water served here. By order of medical officer." The streets were still unpaved and badly drained. The melting snow had left them filled with muddy water, through which army trucks and cars slowly splashed their way. Even what remained of the sidewalk was under water outside the house where Larry Higgins, the government agent, had his offices.

Higgins has been forty years in the Yukon and until the Alaska Highway was built he had the advantage of knowing virtually everyone in the territory. With one assistant, Bob Fisher, he combines the offices of mining recorder and agent for crown lands and crown timber. He is registrar of births, deaths and marriages and on occasion conducts civil marriage ceremonies. He is secretary of the school board and the hospital board. And he looks after the government liquor store.

As I waded through the water one of the men standing in line waiting for the liquor store to open grinned at me. "They ought to show this lake on the government maps," he said.

The Yukon Territory, created as a separate territory by the Yukon Act of 1898, the peak year of the gold rush, is still largely under the direct control of the Canadian government. Divided into three electoral districts, Dawson, Mayo and Whitehorse, it has only limited self-government through an elected legislative council of three members. The head of the council is the government-appointed controller of the Yukon Territory, who is also ex-officio mayor of Dawson City. The territory also elects one member to the House of Commons. While the Yukon had an entire population of less than three thousand whites and fifteen hundred Indians and Eskimos scattered over a vast area, there was little demand for a greater measure of self-

government. Now, with the development of the territory and the consequent growth of the population, this demand is being raised. It is being heard first in Whitehorse as the center which has experienced the greatest development.

Like the people of Yellowknife in 1939, the people of Whitehorse are becoming conscious of their town's needs. But Yellowknife was a new town, a boom town of shacks. Whitehorse is an old town stirring to new life and painfully aware that after forty years of neglect it is still unorganized and has few community services.

"When the United States Engineers first came to Whitehorse they asked me about incorporation of the town. They wanted to know if water and sewerage systems could be put in. I told them that they would have to rebuild practically the whole town because there was hardly a house worth living in," Horace E. Moore, the editor and publisher of the *Whitehorse Star*, said to me.

The *Whitehorse Star*, the "Voice of the Yukon," has become an institution in Whitehorse and throughout the territory. It was established in 1900 while the White Pass and Yukon Railway was still under construction and Whitehorse was still a city with a transient population of between ten and fifteen thousand. Some of its machinery came from the *Bennett Sun*, which flourished during the time Bennett was a city of twenty-five thousand and died with the city. Of all the newspapers founded in the gold-rush days—Dawson City alone had three, including the daily *Klondike Nugget* which sold for a dollar a copy—only the *Whitehorse Star* and the *Dawson News* are still publishing.

Until Moore came, all type was set by hand and the machinery was powered by a gas engine. Moore had electric

power installed and reconditioned an old linotype. Now the little eight-page weekly has a circulation of four hundred and has regained the influence it once had under its famous editor, E. H. (Stroller) White, whose column in the *Klondike Nugget* made his name a byword in the Yukon. In 1942 it won the Charters cup, offered by the Canadian Weekly Newspapers Association for the best all-round weekly newspaper with a circulation of five hundred and under. The award stated:

"With this thought always in mind, the judges unanimously agreed that the prize should go to the Yukon paper, the *Whitehorse Star*, which is little short of a gem when one considers how far removed it is from the center of things and the limited territory in which it operates."

I found Moore, a short gray-haired man with a scholarly air, in his office at the rear of the printshop, where a corporal-technician working on an army job was feeding a small press. A big cat was sleeping on his desk, stretched out on a pile of papers. On the shelves beside him were books on history and economics, philosophy and law, reflecting his own wide range of interests, for he is a fellow of the American Geographical Society and a member of the American Association for the Advancement of Science and the American Microscopical Society. He studied law in Birmingham, England, where he was born, and majored in philosophy at Milton University, Baltimore, Ohio. In England he was on the reviewing staff of the *Birmingham Daily Post* for three years, and after he went to Canada in 1911 he was variously court stenographer in Vancouver, B.C., clerk and treasurer of the little city of Salmon Arm, B.C., editor and publisher of the *Salmon Arm Observer* and a reporter for Dunn and Bradstreet. In 1932 he took over the *Whitehorse Star*.

"I feel that the Yukon has been held back deliberately for the past forty years," he told me. "Transportation governs development in the north more than anywhere else because of the great distances to be covered, and settlement follows the development of industry. Until now our means of transportation have been limited and expensive and both transportation and industry have been in the hands of a few people more concerned in protecting their own interests than in developing the territory.

"I expect Whitehorse to become a city of some three thousand people after the war and the most important in the territory. Dawson City is fast becoming a ghost city and there is strong feeling here that the administration should be moved to Whitehorse.

"Whitehorse is going ahead in spite of itself. It has been living in the past for years. Before 1942 this was a town where nothing ever happened. If the train did not come in this week, well, it would come in next. There was little industry here and no trade unions. The miners at Mayo had a union for a while and in 1941 the miners at Dawson City organized the Dawson Miners Union. But when the longshoremen organized here their union was broken. Trade unions have always been at a disadvantage in the past because the territory was so remote, and consequently the working people have had little voice in the territory's affairs. Now all this will be changed, although many of the older generation will not like the changes. Families are moving over here from Atlin and other families will come in from the 'outside' to work in the refinery and whatever new industries are established. They will want to play a part in the life of the community and the development of the territory through their trade unions. They will be looking forward, not backward. If we are not afraid to

learn from Russia in building new industries and cities in our north, the whole territory can go forward."

From Whitehorse I flew to Fairbanks. When I left, the snow had already gone from the valleys and there was open water on the Lewes River. The ice was expected to go out any day. The Alaska Highway was still open, but now the convoys were traveling only in the early morning and in the lengthening evening hours. During the day, when heavy tires would cut deep into the thawing surface, it was closed to all except special traffic.

Getting a seat on a plane, even one of the army's C-47 transports, was not easy. There were always more passengers waiting at Whitehorse than there were seats available on incoming planes. And since everyone was in a hurry, invariably it became a question of priorities.

I had been told that I was to leave the next morning, but late in the afternoon a driver came over to the Northwest Service Command quarters and said casually, "The plane's leaving in twenty-five minutes. Is your stuff ready?" It was not even packed. I threw my things into a suitcase, hastily said so long, and followed him out to the car. A one-armed man in civilian clothes was sitting in the back seat. "I hope I make it this time," he remarked gloomily. "I've been trying to get on a plane for a week. And I'm supposed to expedite a job at Fairbanks."

We did not make it. We could not even get started. The car was stuck in the thick yellow mud. With the minutes ticking anxiously by we waited for our driver to return with another car. When he did get back we had five minutes left in which to get to the airport. Following a lumbering truck up the hill above the town, we reached the airport

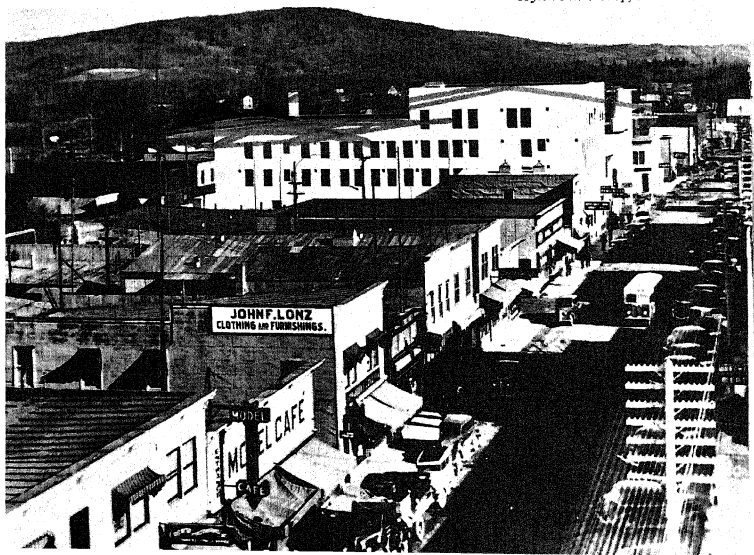


International News Photo

Fairbanks, Alaska, from the Air

Second Avenue Business District, Fairbanks

Hylan Photo Shop, Fairbanks





Photograph from Press Association, Inc.

A Small Farm in the Matanuska Valley Settlement

Typical Alaskan Fishing Fleet

By Ewing Galloway, N. Y.



just in time to see the plane taxiing down the runway for the take-off.

No one was surprised when I returned to quarters, repacked my things and prepared to leave at a minute's notice. I could not go anywhere because a plane might come in at any time. There were planes leaving the next morning, but they all carried full loads. In the afternoon I went up to the airport again. "There'll be plenty of room on this plane," the sergeant who drove the carryall assured me. The one-armed man was there. He looked as though he had been waiting all day. So were nearly a dozen other men, all of them soldiers. They too had heard that there would be seats on the next plane.

We waited around for an hour while a young lieutenant in the Army Air Forces checked names and weights against the manifest of the incoming plane. Only the Engineers officer who had been entrusted with the mailbag looked confident. He was sure of a seat. The rest of us wandered in and out of the building looking up at the sky and speculating on our chances of getting on the plane. At last the lieutenant looked up. "Sometimes I don't know whether we're running a cargo or a passenger service," he stated, glancing over us. "I've got eleven names down here." Outside, the plane was just coming in. He still had not told us how many seats there were. Then he continued, "As I read off your names pick up your baggage and get aboard the plane." My name was fifth on his list.

About a dozen passengers were already on the plane, two lieutenants and soldiers being transferred to camps in Alaska, and the one-armed man, who told me he was attached to the United States District Engineer's office at Fairbanks. We sandwiched ourselves in between the crates,

boxes, mailbags and baggage and hoped that no one with a higher priority would appear at the last minute. It was a relief when we took off.

Below, the creeks cutting a tortuous course through the hills were already changing color, soon to break into spring flood. The ice in the valleys was blotched green and yellow with decay, but high in the mountains it was still white and unmarred.

Presently we were flying low over Kluane Lake, where even in winter the intense blue of the waters is locked in the clear ice piled around the rocky shores. Beyond Kluane Lake, at the edge of a wild and rugged country, were the mountains of the St. Elias range, including 19,500-foot Mount Logan, peak upon peak crowding the horizon as we headed north toward Fairbanks.

In this corner of the Yukon and Alaska, covering an area of more than ten thousand square miles, the governments of Canada and the United States are planning to establish the largest international park in the world. The country is filled with game. There are bear, moose and caribou in the hills, rare Dall white sheep and mountain goats on the precipitous mountainsides. The lakes teem with trout. Until the Alaska Highway replaced the rough wagon road to Kluane Lake few except big game hunters visited this country. But the highway has opened to tourists a fascinating land of tall mountains and broad glaciers, twisted rivers and alpine meadows splashed with pastel colors in the summer.

Occasionally we picked up the thin line that was the Alaska Highway, winding through the valleys in the mountains whose peaks were all around us and presently straightening out across the plains north of Tanacross.

In building this section of the highway the Engineers'

greatest problem had not been the muskeg but the permanent ice. South of Whitehorse eight layers of corduroy and dirt were used in places. North of Whitehorse not more than four layers of corduroy were needed at any point. But in some places there was a foot or more of gray mud over clear blue ice. When they took off the layer of mud the ice melted, leaving the road without any bottom. They learned to build the road on top of the mud, for stretches as long as fifty miles, covering it with three to six feet of corduroy and dirt. Now, along some stretches, the road was sodden with undrained water gleaming in the evening sun. But in other places it was dry, with an occasional puff of dust marking the passage of trucks over it.

At each landing more soldiers clambered on as freight was taken off and weights checked again. Many of them were going to Fairbanks on a forty-eight-hour leave. But the young soldier from New York sitting beside me was making his first flight. Throughout the trip he sat looking down at the country below.

"Jeez," he exclaimed, as we flew up the broad Tanana valley, "isn't that a lonely looking country. I sure wouldn't want to live there. I wouldn't want to live anywhere here."

"If there were cities and towns there and you had a job somewhere in one of them and knew people, it wouldn't seem so bad, would it?" I suggested.

"Yeah," he said. "I guess that's it." But he still looked dubious.

Not long afterwards, four hours after leaving Whitehorse, we were coming down out of the sunset, over the lights of Fairbanks into the twilight of Ladd Field.

Fairbanks—on the Road to Asia

In Fairbanks, when they are not discussing the war against Japan, people like to talk about the Soviet Union. Often they relate the two, although generally not in the same way as the M.P. who examined my papers when I stepped off the plane at Ladd Field. "I say that if the Russians won't give us bases in Siberia then we should take them," he remarked to another M.P. as he took my fingerprints and checked my Alaska Travel Control permit. For a moment I was taken aback. Was this the way people in Fairbanks were talking? I had heard nothing like it at Whitehorse.

It was not a coincidence that when I drove the three miles into Fairbanks and bought a copy of the *Fairbanks News-Miner* I read that Father Bernard R. Hubbard, the "Glacier Priest," had told an audience in Chicago, "Either by force or the consent of Russia, the government of the United States must obtain the use of air bases in Russia in order to bomb Japan."

In their implication of division between the United States and the Soviet Union, a division which Japan would strive to exploit, such ideas can also be dangerous to the security of Alaska. Unwittingly spread, they do nothing to strengthen friendly relations between the United States and the Soviet Union in that part of the world where the

two countries are neighbors. And the general impression I gained in the territory was that Alaskans recognize the fact that their relations with the Soviets in neighboring Siberia will have an important bearing upon American-Soviet relations as a whole in the postwar period.

It is well-nigh impossible in Fairbanks not to become involved in discussions of the war. Alaska is a war front and its people know the strategic importance of their territory. Brigadier General W. L. (Billy) Mitchell's name often crops up in conversations as people recall his statement, "Alaska is the keystone of the Pacific arch. An aerial campaign against Japan can be pushed to best advantage from the territory."

The Japanese understood that too. That is why, in the years before the war, they conducted their systematic espionage, charting Alaskan waters through fishermen who proved not to be fishermen and mapping the country against the day they could send their armies to seize it. That is why they occupied Attu and Kiska and would have taken the entire Aleutian chain had their attack on Dutch Harbor succeeded.

It is no wonder that the people feel they have at last come to open grips with an enemy whose insidious encroachment they found it difficult to prevent. But they are no longer so concerned over the defense of their territory as they were in the first dark months of 1942. Now they are talking confidently about the coming offensive against Japan, in which Alaska must be an important base of operations. The Battle of the Aleutians, they know, was only a prelude to the Battle of Japan.

When people talked to me about the Soviet Union it was usually to ask me the questions I heard everywhere I went in Alaska. Did I think Japan would attack Siberia? Would

the Soviet Union help the United States to defeat Japan? The first is a question that no one can answer, although it will be speculated upon, and nowhere more than in Alaska, until it is resolved by the course of events. The Japanese have not forgotten the defeats inflicted upon their troops by the Far Eastern Red Army during the border wars in 1938 and 1939. Only fear and desperation will lead them to accomplish their own active military encirclement. Yet they must still maintain their Kwantung Army, which could be used in other theaters, facing the Far Eastern Red Army on the Manchurian-Soviet frontier. This is also a partial answer to the second question, for the Soviet Union has already contributed to the defeat of Japan. China holds the key to the war in the Pacific. From China, Japan can be bombed and an invasion launched. And the inspired resistance of the Chinese people was strengthened by the aid they received from the Soviet Union during the four long years they fought alone.

These are facts for which the American people have cause to be grateful. Most Alaskans, I think, recognize them. They have no doubts where the Soviets' sympathies lie and they are generally ready to concede that the Soviet Union cannot grant the United States use of its air bases in Siberia without entering into war with Japan and diverting its own strength from the eastern front. I met few who advocated the seizing of bases in Siberia or who confided in me their opinion that the planes now being sent to the Soviet Union would one day be returning over Alaska.

I remember the words of a young corporal in the Army Air Forces one night in the Sky Lounge, Fairbanks' popular modernistic bar, when someone made a remark like that. He was drinking, but he was not drunk. Bringing his

fist down on the table, he got to his feet and said slowly, "Those planes are helping us to defend our country. Yes, and I mean Alaska too. It's guys like you, talking about seizing bases from our allies, who can't see straight." He was not drunk, but he was very angry.

Many people in Fairbanks have met and talked with Russians since the war and out of these casual meetings has come a new understanding and a clearer perspective for the future.

Before 1941 there were some who raised the specter of a Soviet invasion of Alaska. When *Pravda*, the organ of the Communist party of the Soviet Union, in a reference to the sale of Alaska to the United States, pointed out that it was done by the Tsarist regime without the consent of the Russian people, this was construed to mean that the Soviet Union was laying claim to Alaska. There were reports from Nome that the Soviets were fortifying Big Diomed Island in the Bering Strait less than three miles from Little Diomed Island on the American side of the international boundary. Subsequently it transpired that the Soviets had established a weather station on Big Diomed Island as part of a chain of such stations serving their northern sea route.

Most Americans in Alaska used to smile at such statements. With the Soviet Union as a neighbor they were often better informed than Americans in the United States. They knew that the Soviets had their own vast regions in Siberia to develop. And after all, they knew something of their own history.

Friendly relations between Russia and the United States were a factor in determining the American purchase of Alaska for \$7,200,000 in 1867. Russia at the time was faced with an increasing debt and finding it difficult to raise

revenues. It was deeply involved in Europe and following an expansionist policy in Asia which constantly brought it into conflict with British interests. Its hold on Alaska was precarious, for the Hudson's Bay Company was steadily encroaching on the territory. In 1839 the company leased the Alaska Panhandle, originally established to protect the Russian settlements on the islands, and eight years later it built Fort Yukon on what was admitted to be Russian territory. The sale of Alaska appeared as a solution to these difficulties. So Russia turned to the United States, where expansionists, alarmed at the Hudson's Bay Company's advance into a territory American traders wanted to exploit, were already advocating its acquisition.

For a century and a quarter following its discovery by Vitus Bering in 1741 Alaska was a Russian possession. But Alaska today is no more Russian than Louisiana is French or California Spanish.

What was Russian has become part of what is Alaska. And Alaska is essentially American, a great territory aspiring to statehood. The Russia of the Tsars contributed to the early development of the territory. It left its imprint on Sitka, the old Russian capital from which Alexander Baranof vigorously directed the affairs of the Russian-American Company, on Kodiak and other settlements. But it left no large Russian population. After the American purchase the population, exclusive of Indians and Eskimos, was estimated at 264 Russians and 244 half-breeds. Except for the period of Baranof's administration, when local industry and agriculture were encouraged, the Russian-American Company, like the Alaska Commercial Company which acquired its property and rights in 1870, was more interested in the fur trade than in settlement and development.

While Alaska was still a Russian possession, despite its remoteness and the slowness of transportation, trade flowed from the territory across Asia and Europe. It continued to flow until the Soviet Union was established. After that the fifty-four miles of water separating Alaska from Siberia, the natural bridge between two continents, became an unnatural barrier. The Eskimos continued to cross on the ice, but theirs was the only traffic. Now the historic route has been reopened.

I found that people in Fairbanks were already discussing the great opportunities for trade and postwar co-operation created by the new developments. Some of them, in fact, businessmen, students, stenographers and housewives, and a few soldiers, were even attending Russian language classes, started at their own request.

What could be accomplished by co-operation was shown on a number of occasions even before the war. Academician Otto Schmidt, the famous Soviet Arctic explorer, was taken to hospital at Nome in 1933 after the crew and passengers of the lost *Chelyuskin* were rescued from the Chukot Peninsula by Soviet pilots, some of whom flew from Alaska in American planes. In the same year Sigmund Levanevsky made a flight of eight thousand miles to rescue Jimmy Mattern, the American flyer, from the Chukot Peninsula and take him to Alaska. And in 1937 Mattern was one of the many American and Canadian flyers who searched for Levanevsky when he was lost on his second transpolar flight. Levanevsky was never found, but the systematic search for him was an outstanding example of co-operation between the Soviet Union, the United States and Canada in the north. The American end of the search was organized at the request of the Soviet government by Vilhjalmur Stefansson, Sir Hubert Wilkins and Air Commodore Her-

bert Hollick-Kenyon. While Soviet flyers searched the eastern Arctic, American and Canadian flyers, including Joe Crosson, one of Alaska's best-known bush pilots, combed the western Arctic. Their efforts were not wasted. Just as the long search for Sir John Franklin's lost expedition led to the exploration of the Canadian Arctic, so the search for Levanevsky, particularly the flights conducted by Sir Hubert Wilkins, added to knowledge of Arctic flying conditions and demonstrated the importance of international co-ordination of weather forecasting.

In the course of the war the foundations for full co-operation in the north are being laid. The Alaska Highway, which now links Fairbanks with the continental United States, is also a link with Siberia and through Siberia with all Asia and Europe. Fairbanks, like Edmonton, lies on the Great Circle route. By air it is almost equidistant from New York, 2,860 miles, and Murmansk, 2,800 miles. The new centers of Siberia are even nearer. Yakutsk, the capital of the Yakut Autonomous Soviet Socialist Republic which, in terrain and climate, is similar to parts of Alaska and the Canadian Northwest, is only 2,100 miles from Fairbanks by air. Alaskans, knowing something of the rapid development of Siberia during the past two decades, believe that now they too can develop their territory on an ambitious scale. In the common problems of Alaska and the Soviet Union in the north they see the basis for postwar co-operation and trade.

Alaskans have another link with the Soviet Union, for when the Soviets began to develop their mining industry, several mining experts went from Alaska to work in the new mines. One of them was Fred Carlson, a hard-working,

easy-going engineer who left his native Sweden as a young man to go to the United States.

For fifteen years after he went to the northwest in 1906, Carlson worked on gold-dredging operations, first at Dawson City and then at Ruby, Alaska. He became an expert in the thawing of frozen ground. Frost, both seasonal and permanent, was one of the problems the Soviets encountered in developing the great Aldan goldfield in the Yakut Republic. So Carlson was given a two-year contract as a consulting mining engineer and went to Siberia in 1922. He found the Aldan goldfield like the Klondike, with ten thousand miners working there. Two years later he returned to Alaska with a Russian wife.

"I was his interpreter," Mrs. Carlson explained to me in her painstaking English when I met the Carlsons one evening at their home, small and modest like most homes in Fairbanks because of the high building costs. "He learned some Russian, but he could not get along without me. We were married at Nezametni"—she spelled it out for me carefully—"where we were stationed most of the time. When I came to Alaska with him I found it very different here, and yet not so different. The country, yes, it was very much the same, but it seemed that so little was being done. When we left Siberia the whole country was changing. People came to a new district and stayed awhile and then they moved on to another new district. Roads were being built everywhere." She smiled, and added, "Just like it is here now. People were coming and going all the time."

Carlson nodded thoughtfully. "Sure," he said, "you could put me down in some parts of Siberia and I would think I was still in Alaska. The Russians have established industries and built cities in the north. We can do the same.

We've got the resources and the farm lands. Now that we're getting the roads and railroads we can really go ahead. Look what we've already done."

He said this with all the pride Alaskans have in their territory. It is a big territory and they like to do things in a big way. They are getting their opportunity in the Alaska of today, still confused by lingering antagonisms but eager to co-operate with the Soviet Union; at once a strategic war front and a frontier of the postwar world.

Fairbanks is a reflection of Alaska, the old Alaska that was and the new Alaska that is emerging from the rapid wartime development. It is a little heady, perhaps, from new achievement, but the people of Fairbanks have a right to be proud of their accomplishments.

When I was last in Fairbanks some years ago it could with some justification be called the "biggest log-cabin city in the world." It was a larger edition of Whitehorse in many ways. Today Fairbanks is a city, while Whitehorse remains a pioneer town.

The city has its modern bank and office buildings, hotels and apartment houses, theaters and drugstores. It also has its skidroad down by the Chena River and its ramshackle cabins on the outskirts of town where the paving ends. Here, too, it has its joints like the Wagon Wheel in which the night life runs fast and wild. It has its housing problems created by the influx of people since the war began. Soldiers and workers throng its streets and rub shoulders with air-men of three nationalities on Saturday nights when it is hard to get into a café or find a taxi. In most of these respects it is like a thousand American cities of the same size, around six thousand population in 1941, although it is said to have doubled this since then.

It also has its business organizations among the merchants and its trade unions among the miners, building trades and café workers. It has its millionaire businessman in stooped, white-haired Austin Eugene Lathrop, familiarly if not always popularly known as "Cap" Lathrop, who has done his best to convert Fairbanks into the equivalent of a company town. "Cap" Lathrop owns the Healy River coal mines south of Fairbanks on the Alaska Railroad, where the miners work on a contract system and have no trade union. Astute "Cap" Lathrop does not like trade unions. His boast is that unlike the owners of most of Alaska's mines he runs his many interests from Alaska instead of the United States and invests his money in the territory. He owns a bank, the daily *Fairbanks News-Miner*, the KFAR radio station and other extensive property in the city. But nevertheless he joined with absentee owners in opposing Governor Ernest Gruening's tax program which would give Alaska schools and hospitals as modern as the new theaters he has erected in Fairbanks. That city owes more to him for its modern appearance than it does for its progressive outlook.

In other respects Fairbanks has an atmosphere which is all its own. It is made up of many little things: the log cabins huddled together within a stone's throw of concrete buildings; the deepening paths through the snow to wood-piles in the winter; the tang of wood smoke in the air on a spring evening; the fleeting curtain of twilight that separates the long summer days; and now, the endless drone of planes in the sky.

When the ice is about to go out on the Chena River men stand around the bridge all day long and make their bets with each other, speculating as to whether the ice will move tomorrow. And the breakup on the Tanana River is an

event which provides everyone with a ready topic of conversation for days before and after. Toward the end of April thousands of dollars for someone hang on every minute of the day. When the whistles blow to signal that the ice has moved everything comes to a standstill while people find out who won the pool and tell each other how close they came to getting a fortune.

In other years when the ice went out the miners would be getting ready to leave town. Today most of the big gold-mining operations that have sustained the city since it was established in 1902, during the stampede following Felix Pedro's discovery of gold, have closed down for the duration of the war. The United States Smelting, Mining and Refining Company, which used to employ hundreds of men, now has only a maintenance crew of twenty and the big dredges are idle. Some of the small operations are still being worked, but most of the miners have found employment on the war projects. Gold, which first brought Fairbanks into being and lent it much of its color, has been eclipsed by the war.

If Fairbanks has an atmosphere all of its own, so is KFAR, the station of the Midnight Sun Broadcasting Company, not quite like any other station in North America. Its studios in Fairbanks and its transmitter five miles outside the city are the equal of any in Seattle or Vancouver. It has the pick of programs from all networks. Its difference lies in its greater importance to the people it reaches—Fairbanks is a "dead" area for radio reception—and the special broadcasts put on by Wilson K. (Bud) Foster, KFAR's enterprising young manager.

"I never realized how much radio meant to the people

in the north until I made my first trip to Fort Yukon. The schoolchildren turned out to meet me and everyone wanted to talk to me," Foster said to me when he took me around the studios. "To them I was the familiar voice that gave them the news, announced their favorite programs and kept them in touch with a world many of them had never seen."

In Alaska and throughout the north radio means far more to the people than it does "outside." It is their main source of information and entertainment. Nearly everyone in Alaska has a radio and the more remote the place the more important radio is to the people. Trappers and miners no longer feel so isolated when they can turn on the radio and listen to the finest music or the latest news. Pilots flying in difficult weather tune in KFAR and listen to their favorite programs while they ride its beam to Fairbanks.

Realizing the particular importance of radio in Alaska, the army has co-operated with the station in producing special programs and the station now devotes a lot of its time on the air to programs presented by soldiers stationed at Ladd Field. Any soldier can write to the station asking to hear another soldier on one of these army programs and as a result some fine talent has been discovered.

The station has also endeavored to stimulate native culture by presenting programs of native music. Once it brought a group of Indians by plane from Aklavik, in the Canadian Arctic, to give a program.

"They brought drums, rattles and all their own instruments with them and although the radio was strange to them they were more intrigued than awed by it," Foster related. "They asked endless questions and wanted to know everything. One of them, I remember, particularly at-

tracted my attention because he wore an old-style police chief's hat with 'Chief' on it. I wondered why he wore it, but later I found out that he really was the chief."

Indirectly the station has also helped to stimulate music among the Indians who have learned to play popular tunes by listening to its programs. For some time announcers at KFAR were puzzled by the repeated requests they received from Fort Yukon for certain pieces, particularly the "Beer Barrel Polka," to be played on the night-request program. They did not like to refuse any request, but they were getting tired of hearing some of these pieces and so, they felt sure, were other listeners. One day Bishop J. Bentley came into the station with an explanation. The Indians at Fort Yukon had collected some old instruments and formed a band. They were learning their pieces by having them played night after night over KFAR.

While the station comes in well as far north as Point Barrow and as far south as the Aleutians, it has not yet enough power to ensure good reception in eastern Siberia or China. Its application for an increase in power from 5,000 to 10,000 watts has gone before the Federal Communications Commission and once this is granted Foster hopes to be able to put on special Russian-language broadcasts.

"Since Alaska and Russia are such close neighbors in the north and are being drawn even closer together by the war, I think such programs might do a great deal to promote mutual understanding and strengthen friendly relations," he told me.

Many of the special programs given over KFAR since it first went on the air in October, 1939, have been made from planes. In 1940 and again in 1941 the station made a broadcast of the famous Fairbanks dog-team derby, to take

part in which dogs were flown from points as far away as Hog River and Nulato. From a plane above the course Foster gave a running account of the race as the teams, identified by a large number on each sleigh visible from the air, raced from Fairbanks to Livengood and back again.

Again, when Pan American Airways inaugurated its service from Seattle to Fairbanks in May, 1941, Foster went to Seattle and flew back to Fairbanks in the first plane, broadcasting an account of the trip while the plane was over Canada.

Radio and aviation are closely linked in Alaska; how closely I did not appreciate until I met a group of young pilots flying for Pan American. Bud Foster introduced me to them: Don Wallace, aged twenty-three, from Seattle, who had been flying in Alaska since December, 1941; Stan Depke, aged twenty-five, from Waverley, Washington, and Jack Howe, aged twenty-eight, from Seattle, both of whom have been flying in Alaska since February, 1942. They were typical of the young pilots who have taken over the commercial runs since many of the older bush flyers joined the Army Air Forces.

Their job is not to pioneer new routes over an uncharted wilderness. The veteran bush flyers did that. The 540-mile route from Fairbanks to Nome is spaced with fine landing fields and they have come to know it as a truck driver knows the highway he travels every day. For them the flight to Nome and back in one day—they are in the air about ten hours—is all in that day's work.

As I sat talking to Wallace and Howe they told me that Depke should be in from Nome soon and Wallace tried to pick up the Pan American station on the radio. Five minutes later Depke walked in.

"Well," he said, "that makes forty-two round trips to Nome since November 1, but I sure had a close call today."

"Tell us about it," invited Wallace.

"I ripped the bottom off a ski at Tanana. It sank through the snow and snagged on a rock. I thought sure I was never going to get her off the ground."

Immediately they started to discuss the conditions of the various fields, where there was still snow and where they were now landing on skis in mud.

Soon they were telling me about their work, confirming what every flyer in the north knows, that the people are air-minded to a degree unknown "outside." Living in little settlements, many of which are still unconnected by road, they have come to depend upon air transportation for everything. The radio keeps them informed and entertained. The planes bring them mail and goods ordered by mail which otherwise would take weeks and months to reach them.

"People send 'outside' for what they want and simply have the parcel sent to Pan American," said Howe. "Then we have to find out where they are, maybe pay the charges as well, and deliver the parcel. But there's one thing in this country, you soon get to know everyone along the line."

The casual way in which the Indians and Eskimos have accepted air travel amused Depke, a dark, stocky lad with unruly black hair.

"We run a sort of taxi service for them," he stated. "An Indian woman will come along and ask if we have room for a passenger, and when we tell her, 'Yes,' she'll say, 'Wait, I have to get baggage.' Two or three minutes she'll be back with two or three kids and a pile of baggage. We'll drop them somewhere along the line and pick them up again on the way back from Nome."

But Depke was also indignant about the conditions he had observed among the natives.

"You see those little kids out on the landing fields in the middle of winter wearing tennis shoes and canvas gloves," he declared, his eyes angry. "The Indians sell us the moccasins and mukluks they make, but their own kids have to go without. It seems to me that in opening up Alaska some way can be found to help the natives find their place in the country instead of destroying their old way of living and giving them nothing in return."

Depke, Wallace and Howe have been flying in Alaska for less than two years, but they have seen the face of the country change under the wings of their planes. As a pilot on the Seattle-Fairbanks run Wallace watched the Alaska Highway take shape, the thin survey lines broadening into sections of road and creeping toward one another across the wilds.

"We used to discuss the highway and argue among ourselves which route we thought it should take. But the routes which looked best to us from the air were seldom the ones taken by the Engineers," he said.

Now, on the Fairbanks-Nome run, they can see a similar process being repeated, preparing the trackless interior of Alaska for the changes of the future.

As short a time as they have been flying in Alaska, they have already seen tragedy strike close to their own lives to remind them of the hazards they face every day on their job, for all its seeming routine.

In March, 1943, Les McLennan, a Pan American pilot on the Fairbanks-Nome run, and his mechanic, Fred Moller, who was the first plane mechanic in Alaska to be licensed, crashed in the wild country around the headwaters of the Nulato River. After the wreck had been found Pan Amer-

ican pilots who flew over the scene were convinced that McLennan and Moller had been killed, for there was no sign of life. A dog-team expedition was organized at Nulato to bring in the bodies.

A few days later, back in Fairbanks, a group of Pan American pilots were discussing the crash with "Bud" Foster. "I'm convinced that if anyone could come out of that crash alive it's Fred Moller," stated Depke. "He's walked away from twelve crashes and I'm willing to bet he walked away from this one." "There's only one way to make sure. Let's go out and take another look at the wreck," Foster said.

The next morning, in a plane piloted by Depke, with Wallace as copilot, they flew out to Nulato, where they learned that the expedition, nine men with four dog teams, had left several days before. Then they went on to the scene of the wreck. They found the wrecked plane, its nose smashed so that the engine had been forced back on top of the cockpit, and its wings crumpled. After that, according to Foster:

"We flew up and down mountain valleys, sometimes with our wings almost touching the sides, looking for the dog-team expedition. We finally found it about thirty-five miles from the wreck, headed back toward Nulato. Circling around, we dropped notes asking the men to write 'N' in the snow if McLennan and Moller were dead, 'Y' if they were alive and 'YW' if they were alive and walking to the nearest settlement."

"You can imagine how we felt when the letters 'YW' appeared in the snow and under them an arrow to indicate that McLennan and Moller were walking west, toward Ungalik," Depke interrupted.

"We dropped some supplies to the dog-team expedition

and started out to comb the country," continued Foster. "We were flying low over gullies and creeks, following the Shatolik River, when suddenly two little figures burst out of the brush where they must have been preparing to camp for the night and ran onto the ice, waving their arms wildly. We could not land because our Electra was not fitted with skis, so we circled them and dropped grapefruit juice, bread, butter and ham. We were so excited we even dropped eggs. Then we radioed to Nulato for a relief plane. I had no transmitter in the plane, but I flashed word back to KFAR and the news was immediately broadcast throughout Alaska. Twenty-four hours later we were all back in Fairbanks, discussing the crash again."

Alaska's young pilots are following in the traditions established by such pilots as Joe Crosson, Haakon Christensen, Frank Pollack, Bill Lavery, Sig Wien, Harold Gillam and others whose names and faces are familiar in the farthest settlements. The kids know them all. Ask any Alaskan boy what he intends to be and the chances are he will tell you he wants to be a flyer.

In addition to Pan American Airways, the territory has several large air lines of its own, including Alaska Star Airlines, which has now absorbed Pollack Airlines and Lavery Airways, and Wien Alaska Airlines. There are also many smaller lines such as that operated by Jimmy Dodson, one of Alaska's most popular pilots. Between them in 1941 they carried 41,703 passengers, hauled 4,900,000 pounds of freight and covered 7,900,000 miles. It is a proud record for a territory which before the war had only 72,000 people.

Aviation in Alaska is also preparing for the postwar period. Since 1941 the Civil Aeronautics Administration has spent \$22,000,000 in the territory.

"The system of airports, communications networks and

radio direction ranges now being completed in the territory by the CAA was planned for peacetime use as well as for military security," states W. L. Seeley, chief construction engineer for the Civil Aeronautics Administration in Alaska.

The shape of the future is already discernible in the present. Alaskans are confident that their territory will become an aerial crossroads of the world.

While aviation is opening a greater future to Alaska, the territory's foremost liberal educator is preparing a new generation of Alaskans for that future. He is Dr. Charles Bunnell, president of the University of Alaska.

Around seven o'clock one morning I got on the bus which was making its first trip to College, four miles west of Fairbanks, over a road that had been closed by spring floods for several days. The bus was full of students. They might have been students anywhere in the United States, most of them animatedly laughing and talking, a few trying to read, and in the back seat a boy and girl wrapped in a world of each other. But this was the road, rutted and heavy with mud, that led to the University of Alaska, 120 miles south of the Arctic Circle.

"Hey Joe, catch," called a blonde girl in one of the rear seats. She deftly tossed a parcel to the boy sitting in front of me and Joe, a broad-faced smiling Eskimo, turned quickly and caught it. For a moment I had a glimpse of the new Alaska.

The bus jogged along past farms and newly plowed fields. Presently it climbed toward a cluster of buildings on a grassy hillside looking out across the rolling Tanana valley. In the distance the peaks of the Alaska Range gleamed like crystal in the early morning sun.

This was the University of Alaska, one of the sixty-nine land-grant colleges in the United States. When it was first opened in 1921 as the Alaska Agricultural College and School of Mines it had only six students and was so short of funds that Dr. Bunnell himself advanced \$5,000 to carry it through the first year. Nevertheless, in two decades it has grown from the original two small college buildings, erected in 1918-19 but not immediately opened because there were no funds, to eight buildings. It has agricultural experiment stations at Fairbanks and Matanuska and a fur experiment station at Petersburg. In 1941 it had an enrollment of 310 students, with another 1,126 taking extension courses in cities as far away as Petersburg, Juneau and Kodiak. Students come from many states and all parts of the territory, more of them than the university can accommodate, and applications must be turned down for lack of space. Yet the university provides most young Alaskans with their only opportunity for higher education.

The University of Alaska can justly claim to be a people's college. Students who have been resident in the territory for one year before their enrollment pay no tuition fees. They can get a room in one of the four dormitory buildings for ten dollars a month and board for thirty-five dollars a month. Students do many of the chores around the college. Most of them work during the summer months and make enough to pay their way. Some take seasonal jobs in Fairbanks and other cities and some work in the canneries and the mines. Several talented Eskimo students have earned enough from their ivory carving to pay their expenses and the university keeps a small stock of ivory for this work. In past years Dr. Bunnell has lent money to many a needy student, particularly Eskimos and Indians, but now the

university has its own student loan fund, which has made between six and seven hundred loans without having a bad debt.

As one young professor told me, "Students come here because they want an education and are prepared to work to get it."

At its agricultural stations the university has already made a practical contribution to the development of Alaska. Experiments are conducted to determine what grains and grasses give the best yields under varying northern conditions. Test plots of potatoes are sown and the problems of storing potatoes studied. Dairy farmers in the territory have difficulty in curing sufficient forage for their herds, so the Matanuska station is testing various kinds of ensilage. At the Petersburg station, research work in breeding and feeding fur-bearing animals has an important bearing on the development of the fur industry.

Research work is not limited to this. Through expeditions sent out by the university, archaeologists have extended their knowledge of Eskimo culture and obtained new facts on Alaska's past. One collection of Eskimo artifacts, from excavations made at Kukulik on St. Lawrence Island, is now in the Territorial Museum at Juneau. Another has been sent to the Academy of Sciences of the USSR. A third, sent to the Danish museum at Copenhagen in exchange for a collection of Eskimo artifacts from Greenland, is now in Scotland for the duration of the war. The mysterious Eskimo settlement at Ipiutak, estimated to have been inhabited by several thousand people at one time, was discovered by an expedition sponsored by the University of Alaska and the American Museum of Natural History and the university's own museum has a fine collection of the elaborate ivory carvings excavated from this

ancient site. For seven years Dr. Bunnell himself financed these expeditions until their achievements brought belated recognition and the Bureau of Indian Affairs undertook to finance the work.

Now that the war has halted its archaeological studies, the university is engaged in other work. Since 1941, in co-operation with the Carnegie Institution of Washington, it has been engaged in special research work in terrestrial magnetism and it has one of the only two stations on the continent, the other being in Peru. The Federal Communications Commission also established a radio monitoring station at the university in 1941, a tribute to the importance of this little-known college at the top of the world.

Had it been directed by a man less devoted to the territory than Dr. Bunnell, much of this work might never have been done. Others might have been content to accept the limitations imposed by a lack of funds, but not Dr. Bunnell.

When I dropped into his office he was already hard at work, as keen and brisk as the morning itself. The war has brought new difficulties of accommodation because the army is now using some of the university buildings. It has created other problems too, but the university's broad-shouldered, vigorous president who, at sixty-five, finds as much pleasure in his onerous work as the most eager of his students, is already planning for the future.

"After the war we won't be able to keep ahead of the parade," he said to me. "There is the problem of education for the Eskimos and the Indians. What are we going to do for them as a result of all this development? Many of them are now with the army in the Aleutians. Most of them are good craftsmen. They are especially good at electrical work, mechanics and carpentry. They won't go back to the

villages where there is little or no opportunity for them. And in any case, the Alaska they will return to will have changed and developed beyond our greatest hopes of a few years ago.

"There needs to be an extension of industrial schools to equip them for their part in the changing life of Alaska. The natives have to make their living by virtue of their contact with white people and it's up to the white people to make that contact as sound as possible. If we had a technical school at the university we could give them the practical work to do, to their advantage and ours. Some of our finest students have been half-breeds, Eskimos and Indians."

Dr. Bunnell acquired his interests in the question of educating the Eskimos and Indians from a wide experience in teaching the natives. He was born at Dimock, Pennsylvania. His first job after he graduated from Bucknell University and went to Alaska in 1900 was teaching school at Wood Island.

"Most of my students spoke English in school, but the moment they got out they lapsed into Russian," he recalls now.

In 1903 the school board at Valdez elected him as public-school principal and obtained his release from Wood Island before he heard anything about it. He taught at Valdez for four years and practiced law there for another seven years. In 1915, when he was thirty-seven, he was appointed as a federal judge, resigning six years later to become president of the college. Today he sees the development of Alaska through the growth of the university.

He already has in mind the establishment of a department of oriental languages. And he believes that there should be an exchange of information between Alaska,

Canada and the Soviet Union in all fields of related endeavor.

"It would help us, particularly in our agricultural work," he stated, adding that the university had received some Soviet publications on agriculture before the war.

His parting words to me, as I left his office carrying as many books as any of his students, were, "Don't give the impression that we have a fine modern university here. We haven't got what we want yet, but we'll get it."

Like the city of Fairbanks itself, it was a good beginning for the new Alaska.

Windows to the East

To most people the totem pole is the symbol of Alaska. It should be the tin can, for no other article is so indispensable to the life of the territory today. Alaskans get their milk out of cans. They get their fruits and vegetables out of cans and much of their meat and fish. Outside the cities they carry their water in 5-gallon gasoline cans, which are also ripped up by thrifty housewives to make pails and dustpans. The same cans, flattened out, are used to patch roofs. Without the tin can, the great salmon fishing industry would be paralyzed and there would be no work for the hundreds of men and women who find seasonal employment in the canneries.

Strangely enough, Alaska is the only part of the United States where placer tin is found. Yet Alaskans complain that their tin resources are not being developed as they should be, despite the critical shortage of the rare metal.

The mines at Tin City on the Seward Peninsula are only one hour's flight from Nome, the gray little town on the shores of the Bering Sea which is the ultimate terminus of the roads and railroads being constructed through the territory.

The war has brought changes to Nome, as it has to most other cities in Alaska, and its life has a quickened beat. But the soldiers do not like Nome any more than they like the Aleutian Islands. Perhaps they have read too much

about this almost legendary city of the gold rush of 1900, but they are generally disappointed by the drab town with the leaning buildings and the bleak beaches which once were thronged with ten thousand gold seekers. They find the miles of treeless tundra monotonous and long for a sight of the forests that cover so much of Alaska.

"I don't see why anyone would want to live at Nome," one soldier said to me with disgust in his voice. "But the people think there's no place like it."

The people of Nome, who take a pride in their town and believe in its future, do think there is no place like it. To the troops it may be another lonely Alaskan post, but to them it is home. They like its climate and declare that there is no more pleasant place in the long summer days when the water is warm enough for the children to play in the booming surf along the beaches.

Nome today is a strategic place, not so much for the present as for the future and what that future can bring. Of all Alaska's windows to the east it is the only one directly overlooking the Soviet Union. Donald MacDonald, after years of campaigning up and down the continent for an international highway through Alaska, can now see his dream being realized. Not long ago Dawson Creek, Fort St. John and Fort Nelson were names strange to most Americans. Now names like Tanana, Ruby and Nulato will begin to acquire a familiar sound.

From the air above Cape Prince of Wales beyond Nome one can look down on two continents with only the narrow Bering Strait separating the Pacific and Arctic oceans. It is the bridge across the top of the world where the days merge and the United States and the Soviet Union meet.

Below is a desolate expanse of snow-covered tundra and hills on which rotting ice traces the wandering pattern of

the creeks. On a few of them there are buildings but there is tin in nearly all of them. Presently Tin City appears. It is little more than a group of low buildings on the flats and all around it are the lonely hills. It might be any one of a score of little mining settlements I have seen in different parts of Alaska.

Inland from Tin City and its neighbor York, down the coast toward Nome, are the placer operations from which tin worth more than a million and a half dollars has been shipped since the deposits were first worked more than forty years ago. They are the most important producing deposits in the territory, but as one miner told me:

"There's all kinds of tin in the area. But who's going to work it with prices the way they are? You just can't get most miners interested in tin. If some of these lodes were developed they could be worked all year, but there's plenty of good placer tin not being touched right now."

It is an ironic thought that Alaska, which consumes so much tin, should find it difficult to develop her own resources of the metal.

Indirectly the tin can is a potent factor in the development of agriculture in the territory. Alaskans consume tremendous quantities of canned goods every year. In 1938, a normal year, they bought \$297,660 worth of canned fruits; \$384,543 worth of canned vegetables; and \$423,378 worth of canned milk. They also imported potatoes worth \$119,627 and green vegetables worth \$375,497. Much of this could have been grown in the territory, but Alaska is an important market and neither the wholesalers in Seattle who supply it nor the shipping companies which transport the foodstuffs are anxious to see the territory become more self-sustaining.

Behind much of the outcry that arose in 1935 when the government settled families from the drought areas of Minnesota, Michigan and Wisconsin on farms in the Matanuska Valley was this fear that the success of the project might lead to a greater development of farming in Alaska and so cut into a profitable market. And it is profitable for everyone except the unfortunate consumer.

The Matanuska Valley project was started in advance of the times. It would have had a far better chance of success from the beginning had it been part of a comprehensive development such as the wartime planned projects which are now transforming Alaska and pointing the way to the future development of the territory. Now the times have caught up with it and the remaining Matanuska colonists have no difficulty in selling their produce.

It was hardly that way when the Federal Emergency Relief Administration shipped families selected from the relief rolls of three states to the valley in May, 1935. There were no houses for them and bush covered their future homes. They lived in tents in the flat mosquito-ridden valley while they cleared the land for their farms, cutting timber, slashing brush and pulling stumps. Two months after they arrived an epidemic of scarlet fever and measles broke out among their children. The Federal Emergency Relief Administration financed the purchase of land and the construction of houses and farm buildings for them and provided them with livestock and equipment. But there were many delays before all the land was cleared, the buildings erected and the families settled in their new homes. Even then, the colonists encountered difficulties, for they found that farming in the Matanuska Valley was a lot different from farming in the Midwest. And they had to overcome the resentment stirred up against them in

Alaska as a result of the scorn and criticism heaped upon the project.

At the time a great deal was made of the fact that the government was spending \$4,000,000 at Matanuska and when some of the colonists gave up the struggle in the first two years and returned to the United States with their fares paid by the government this was cited as proof that the scheme had failed. The colonists who remained in the valley were ignored for the few who chose to leave.

The Matanuska Valley project is not a failure. Its course has been marked by dissension and division, as between the government and the colonists and at times among the colonists themselves, but this is nothing peculiar to Matanuska. The fact that there have been difficulties does not make the scheme one which should not be tried elsewhere in Alaska, provided the mistakes are not repeated. Too much has been made of the failures and not enough of the successes. But then, there are people in Alaska who would not admit the success of the project under any circumstances simply because it originated under the New Deal.

The importance of the Matanuska Valley today lies in its being one of the few developed farm areas in Alaska able to supply the army with the foodstuffs which otherwise would have to be shipped up the coast. To the north is Fairbanks and Ladd Field; to the south is Anchorage and Fort Richardson, the headquarters of the Alaskan Defense Command. The Matanuska Valley supplies both these areas and today the army is taking the greater part of everything the colonists grow and asking for more.

I went to Matanuska, some three hundred miles south of Fairbanks, on the weekly train over the single-track Alaska Railroad, which is neither better nor worse than the

White Pass and Yukon Railway or the Northern Alberta Railways. The only difference is that the Alaska Railroad is owned by the United States government and operated under the Department of the Interior.

Construction of the railroad was begun in 1915 and eight years later it was completed. To the minds of those who have to use it, however, it is still far from complete. It has no diners and no sleepers—passengers eat hurriedly at Healy and Anchorage when the train gets there and go hungry when it is late and they stay overnight at Curry, one of the few operations connected with the railroad where the service is good and the charge, for Alaska, reasonable. The fare of \$23.80 compares favorably with fares on Canada's northern railroads, but for \$35.00 one can fly to Anchorage in comfort.

Alaskans voice the same complaint against the Alaska Railroad that Canadians make against the White Pass and Yukon Railway. They claim that in order to operate at a profit it ignores the interests of the territory and is a factor in holding back development because of the high freight rates. Since 1928, when Colonel Otto Ohlsen became its general manager, the deficits piled up by the railroad in its early years have been wiped out and it now operates at a profit. The war has made it a busy line. But in Fairbanks and Anchorage most of the people are convinced that the profit is being made at the expense of the territory, the people, including themselves, and the men who work on the railroad for generally lower wages than those now being paid in Alaska.

The crowd on the train was much the same as I had seen on other trains in the north. There was a chaplain from the Aleutians and some soldiers from Ladd Field going to the hotel in Mount McKinley National Park. There were

also some workers from defense projects, but nothing like the gangs of men I had seen heading for the Alaska Highway. Most of the passengers were people returning to their homes along the line and there were a few going to Seward to wait for the next boat "outside."

"Nice farming country," said the man sitting opposite me as we left College and rolled leisurely through the broad valley toward Nenana. "I'm thinking of settling down in this country myself, as a matter of fact," he continued after a while. "Not here, but down at Matanuska. You know anything about Matanuska?"

That was how I met Joseph S. Reynolds, who came to Alaska to work on a defense project and decided to go farming instead at a time when many farmers, including some of the colonists in the Matanuska Valley, have left their farms to work on defense projects.

Before we reached Palmer the next day he had told me all about himself. He was a farmer in the Missouri River valley near Townsend, Montana, until 1933. Four years of drought forced him to give up his farm and take a job as a construction worker. He had not thought much about farming again until he went to Alaska and heard about the Matanuska Valley.

"Now," he said, "I don't know, but if it looks as good as it sounds I've an idea I'll be settling down in this country."

The last I saw of him he was setting out to make a trip through the valley, talking to anyone who could tell him about it and apparently impressed by what he saw.

"It looks like pretty good land to me," he declared. "I don't think it'll be hard to clear."

When I left Fairbanks the days were long and warm and it was almost summer. Men waiting to go out to the camps

lollled around the corner by the Chena Bridge and walked around the streets in their shirtsleeves. But in Palmer it was raining and there were few people about. The Matanuska Valley, with the clouds hanging heavily over the surrounding mountains, seemed like part of another country.

It was still raining when I went around the valley, bumping in an old car over muddy roads that wound between sodden fields and past dripping stands of birch and poplar and spruce. There were some farms grass-grown and deserted since the colonists left them for jobs on defense projects. But there were others where the neat red-roofed houses and barns standing in the fields told of colonists who had made good. The cattle were grazing in fields where there was only bush the last time I went through the valley.

Palmer is the center of the Matanuska community. Here the Matanuska Valley Farmers Co-operating Association, organized by the colonists in the fall of 1936, has its store, its creamery and cannery and its garage and power plant. The co-operative buildings have been acquired from the Alaska Rural Rehabilitation Corporation by the Association. With the school, the hospital and the three churches they make up a modern little community which is in striking contrast to many of the older settlements in the territory.

The colonists themselves are gradually taking control of their own affairs and the role of the ARRC is now principally one of seeing that the colonists live up to their agreements, which are still a source of dispute. Some of the colonists owe the ARRC very little. Others, usually through no fault of their own, owe thousands of dollars. Not all of the land was good and some colonists took longer than others to bring their farms into production. Under the original

agreements the debts incurred by the colonists were to be repaid over a period of thirty years, with accrued interest at 3 percent payable at the end of the third year. Some colonists, however, went so heavily into debt that the ARRC was obliged to scale their debts down to \$6,000. The land has also been redivided in some cases and the poorer 40-acre tracts attached as pasturage to the better farms.

Despite all these difficulties, the colony is going ahead and "Matanuska Maid," the brand under which the association sells its products, is now familiar, not only in Fairbanks, Anchorage and other Alaskan cities, but even in distant Seattle.

When Lawrence (Scotty) Dreghorn and Donald Parks first attempted to ship cream to Anchorage, fifty miles away, the venture was a failure. Now, with a creamery at Palmer and a creamery and pasteurizing plant at Anchorage, milk from the valley's several hundred head of Guernsey dairy cattle commands a ready market. In 1936 some four hundred head of Romney sheep were brought to the valley and distributed among the colonists. In the short summers they grazed in the mountains and in the winters they were brought back to the farms. Now the flock has increased to fifteen hundred head. The lamb and mutton are sold at Anchorage and the wool brings a good price in Seattle. Many of the colonists have also gone in for chicken farming. Raising their own feed, they get ninety-five cents a dozen for their eggs in winter and seventy and seventy-five cents in summer. I heard many stories like these.

Some of them were told to me by Charles M. Osborne, who homesteaded on the Matanuska flats in 1926 when there were only a few farms up and down the valley. For

nine years he worked to wrest his farm from the bush and in 1935, the year the colonists arrived, it was flooded by the wandering Matanuska River, which periodically cuts new channels through the flats.

"It cost me about a hundred dollars an acre to clear my land," he said. "The Alaska Railroad furnished me with a cat and breaking plow and I paid the cat operator's wages and the cost of the gas. It still costs that much to clear the land, maybe more, because wages are higher now and equipment is harder to get, but it is good land once it is cleared."

When the first colonists came to settle in the valley they used to go to Osborne for advice and information. Some of them would ask him how they could best make money and he would tell them, "If you've come here with the idea of making money, forget it and go back home, but if you want to make a living, and a good one, you can do it right here."

The staple crop in the Matanuska Valley, according to Osborne, has always been potatoes, which used to bring a standard price of three dollars a hundred. The average yield is between three and four tons an acre, although some farmers get as high as ten and twelve tons an acre. Today the army is offering the farmers six dollars a hundred for graded potatoes, seven dollars a hundred for carrots and eight dollars a hundred for cabbage.

"Some of the colonists gave up and went back home and a good many others have gone to work on the defense projects as carpenters and laborers," Osborne remarked. "This was to be expected. Every frontier has its failures and there were failures in this valley long before the colonists ever came here. I don't hold it against some of them for going to work on the defense projects. The high wages are

a big temptation just like they are 'outside.' But I can't say too much for people like Carl Myers and Archie Moffit and Jack Cope who have made a go of it. Carl Myers and Archie Moffit have both got good dairy farms and while Jack Cope wasn't one of the original colonists, he took over one of the colonist farms and made it pay. I figure that even if some of the farms aren't being worked right now, there will be people coming in after the war who will be only too glad to take them over when they look around and see what some of the colonists have been able to do."

There is other good farm land in Alaska, an estimated hundred thousand square miles of it, in the Tanana River valley, the Yukon River valley and along the Kuskokwim River. Some people told me they believed that the best farming country in the territory was between Happy and Dunbar in the Tanana River valley. Grains, vegetables and small fruits, most of which are now brought in from the United States, all grow well there. But very few are growing them. I was impressed by the fine farms around Fairbanks. I was still more impressed by the miles of empty farming country and the cans of milk that stood on every café counter in the city itself.

One American who believes that Alaska is a good place for farm settlers is Mrs. Miriam Mathers, a fifty-nine-year-old widow who intends to go farming there, not after the war, but now, just as soon as she can cross British Columbia in her creaking old wagon.

In March, 1943, Mrs. Mathers hitched up her horses to a covered wagon, put her goats in a small trailer behind and left her farm at Wapato, Washington. She was on her way to Alaska. She was halted once while one of the two bays drawing the wagon had a colt and again while one of the

goats had kids. Eventually she got to the international border and there United States Immigration officials stopped her because her papers were not in order. There was another delay while she straightened out her tangled affairs. Then Canadian Immigration officials refused to allow her to enter Canada. They said she had insufficient money and no means of support. So Mrs. Mathers settled down on a grassy plot just off the main street of Sumas, Washington, turned her horses and goats loose to graze and waited for government officials at Ottawa to decide on her appeal.

The last time I heard of her she was still there and still determined to get to Alaska. She pointed out that she had farmed successfully in Wyoming and Washington for the sixteen years since her husband died. She saw nothing out of the ordinary in her making the long trip alone through the wilds of northern British Columbia. It was merely an inexpensive way of getting to Alaska. She was convinced that she would get there.

"I think that Alaska has the greatest possibilities of any country in the world," she declared. "That's why I want to go there."

I hope she makes it. Alaska can use people with her courage and determination.

Of all the cities in the territory, Anchorage and Ketchikan come nearest, to all outward appearances at least, to the colorful Alaska of other boom days. Both are important fishing ports and both are lively places when the fishing fleet comes in. Today Anchorage is a lively place all the time, whether the fishing fleet is in or out.

Walking along the main street it is easy to get the mistaken impression that liquor is the city's principal com-

modity and interest, for every third place seems to be a liquor store, a bar or a juke-box joint and they are always filled with soldiers and defense workers and girls, miners and fishermen. At night the two night clubs, the Seven Seas and the Lido, are crowded to the doors. Old-timers say it reminds them of the days of 1914-15 when the Alaska Railroad was being built and Anchorage was founded as a railroad construction town.

Anchorage has also known hard times when jobs were not so easy to get, but today everyone is working and most are getting good wages. Workers on defense projects earn from sixteen to twenty-five dollars a day. Waitresses in the cafés make as high as twelve dollars a day and count on getting twice as much again in tips. Government employees receive a bonus to cover the high cost of living. They need it. Whatever a thing costs in the United States it is certain to cost twice as much in Alaska and Anchorage is no exception. Men walk around with silver dollars in their pockets and get as much in return for them as they would for fifty cents in the United States—ham and eggs, one dollar; haircut, one dollar; taxi down the hill to the railroad station, one dollar. And if it is Canadian money, 15 percent is deducted. Profiteering is open and unashamed. There is no rationing and price control in Alaska as there is in the Yukon and articles now unobtainable "outside" may still be bought—usually at a price.

No group of workers in Alaska today is more entitled to high wages than the fishermen who sail from Anchorage and Ketchikan and other ports. Fishing is still Alaska's greatest industry and the one most affected by the war. The gold mines could be closed down but the fishing fleet still had to go out. America needed the salmon pack and looked to Alaska for more than 80 percent of it.

Alaska's fishermen are performing a national service and they are getting a grim satisfaction out of their work. The Japanese have long wanted Alaska's rich fisheries, with an annual catch worth around \$50,000,000. They would have liked to seize the salmon and halibut fishing areas of the North Pacific for themselves. Without fish Japan was threatened with famine.

Before the war, as fisheries in home waters became exhausted, vessels of Japan's immense fishing fleet ranged far across the Pacific following the fish into waters the Japanese hoped some day to dominate. In 1930 and succeeding years they invaded Bristol Bay, north of the Aleutians, and with them came floating canneries. While they reaped a rich harvest from the sea, ruthlessly depleting the salmon fisheries, they also made themselves familiar with Alaskan waters and territory. Bristol Bay fishermen, faced with this threat to their livelihood, protested and the salmon packers, with more than \$20,000,000 invested in the area, supported their protest. Some of the fishermen even threatened to fire on the intruders. They had seen too many strange craft poking around lonely inlets to believe that the Japanese were engaged only in fishing. In 1937 the State Department entered a formal protest with the Japanese government and the floating canneries were withdrawn from Bristol Bay. But Japanese vessels continued to be seen in Alaskan waters.

In 1942 Japan struck at the Aleutians and Bristol Bay was brought within easy range of the new submarine base at Kiska. The Japanese now had the tunny of the Philippines and the bonito of Guam, but if they no longer dared invade the waters of Bristol Bay except under the guns of their fleet, they might try to prevent Americans from fishing there.

"We went out with guns and kept an eagle eye out for anything that looked like a periscope," one fisherman at Anchorage told me. "The waters were well patrolled, though, and we didn't see a blamed thing." He sounded disappointed. "I heard tell of one guy who claimed he was followed all the way up an inlet by a Jap sub and he didn't even have his rifle with him. But you know how those tales get around." He cast off the mooring rope and clambered into his dinghy. "C'mon, Jack," he called to his partner, who was talking things over with the group of fishermen along the wharf. "Better get going now."

"Sure, it'll take more'n subs to keep us from going out," his partner said as they pushed off. "Maybe the Japs'll get more'n they reckoned on if they come poking around."

Out on the gray waters of the harbor the gillnet boats bobbed up and down with the gulls wheeling over them. Within a few days they would be gone and around the same time the radio would announce that Attu had fallen to an American force. There were still Japanese submarines in the North Pacific, but with a vast radio network to warn the fleet at the first hint of danger, the fishermen could go about their work of bringing in a record catch.

Radio plays an important part in Alaska's fisheries. It enables the fishermen to learn where the fish are running best and keeps the canneries informed of the number of fish being brought in by the boats. Ships picking up the pack from canneries along the coast know in advance how many cases of fish there are and what space to allow for them. Fishermen can keep in touch with their homes by messages transmitted through the canneries' stations.

In 1943, the salmon fishermen went out with a 7 percent increase in pay granted by the United States Regional War Labor Board and they were covered by a \$5,000 war risk

insurance under an agreement negotiated by the Alaska Fishermen's Union, which represents sixteen thousand fishermen and cannery workers in the territory. A new order to concentrate the industry reduced the total number of fishermen from twenty-three thousand to sixteen thousand and the number of operating canneries by 40 percent. But while fewer fishermen went out, they were expected to produce a pack of 550,000,000 cases, 10 percent greater than the pack in 1942, with an approximate value of \$54,000,000. As Harold Ickes, Secretary of the Interior, commented, "It is seven times as much as it cost the United States to buy the territory from Russia in 1867."

From canneries all along the coast, at Anchorage, Juneau and Ketchikan, which cans more salmon than any other city in the world, Alaska's salmon pack is going to other war fronts in all parts of the world. It will find its way to American soldiers in New Guinea and the islands of the South Pacific, a weapon in the war against Japan. Alaska, too, is a war front and the fishermen are among the most important of its war workers. In other years the salmon pack has been shipped to Seattle and then part of it has been shipped back again to the territory. This year, there is one place at least in Alaska which is getting its canned salmon direct. At Fort Greely, Major General C. H. Corlett, a practical man who saw no point in this unnecessary transportation, persuaded the canneries to leave their pack at Kodiak. It was one more of the many changes the war has brought to Alaska.

Except by plane, traveling in Alaska has never been cheap or speedy. It is even worse now with war requirements governing the movement of crowded planes as well as trains and ships, as I discovered when I prepared to leave

the territory and wanted to take the ship from Seward to Seattle. At Fairbanks, officials of the Alaska Railroad could not tell me when the next ship was leaving. At Anchorage, where I had a reservation, the Alaska Steamship Company sold my space because they had told me that there was no ship leaving for a few days and failed to notify me that one was leaving after all. At Seward, I waited an hour in the rain at the head of a long line of men outside the Alaska Steamship Company's offices to get a berth on the ship leaving in a few hours, one of the few who did. Those at the end of the line had to wait for the next ship and no one knew when it would be leaving.

Even then, I found it was harder to get out of Alaska than it had been to get in. When I presented the long, elaborate questionnaire, complete with my photograph, fingerprints and life history, which I had filled out in quadruplicate at Edmonton, the officer in charge of the military police at the dock shook his head.

"This is no good," he said. "You can't leave Alaska on this. This is only good to go out over the Alaska Highway."

After a long argument and a careful scrutiny of my credentials, he consented to give me an emergency permit to leave the territory. So with the ship due to leave in half an hour, I sat down and answered for the third time, in triplicate, essentially the same questions listed on the permit I had obtained at Edmonton.

At midnight we slipped away from the darkened wharf. The rain and the night swallowed the dim outline of Seward, the muddy streets through which jeeps and trucks careened recklessly and the shoddy juke-box joints where a few soldiers and girls tried to make a good time for themselves, all part of the transition from the old Alaska to the new.

The ship was filled with soldiers going home to the United States after being two years in Alaska. They sat around the dimly lit lounge and paced up and down the decks of the blacked-out ship talking in low voices. I caught snatches of their conversation.

"I told him to stay away from that Indian girl, but he wouldn't listen to me. He knew best. Now he's got to marry her. I guess he's stuck in this god-awful country for the rest of his life . . ."

"Jeez, if I'd had to stay there another year I'd have been properly bushed . . ."

"It ain't so bad when you live there, but hell, who wants to live there . . ."

An old top sergeant turned to me and laughed. He had heard them too. "They think they never want to see Alaska again," he commented. "After a while they'll begin to think there's no place like it. You'll see, some of them will be coming back when this war is over."

"They'll come back." It is an old proven saying in Alaska.

Postwar Opportunity

The young American soldier who is driving me from Summit to one of the contractors' camps along the Alaska Highway parks his jeep in the cleared space by the roadside and we get out.

"It's a grand view from here," he says. "One of the best along the road, I think."

It is a grand view. The hill falls steeply to the valley and over the tops of the trees we can see the frozen river flats with the blue water gnawing at the jagged river ice. The mountains rise high and clear and the bright morning sunlight etches every rock and crag in fine shadow.

We seat ourselves on a toppled tree and sit for a few minutes watching the trucks come down the road, slowing where the sign says "Steep Hill" and crawling out of sight around the bend.

A jeep belonging to the road patrol comes bustling up.

"You guys having trouble?" one of the M.P.'s asks.

"No," replies my driver. "We just stopped for a few minutes, that's all."

"Okay, bud," the M.P. says.

The jeep drives off again, bouncing impatiently in the rear of a lumbering truck with "Muskeg Millie" scrawled on the door of the cab.

It is hard to believe that where we sit casually by the

roadside was only wilderness a short time ago. Even yet, the country on the other side of the mountains has been seen by few white men. No one knows what natural wealth it may hold.

My driver gets to his feet and grinds his cigarette butt into the mud.

"What do you think is going to happen to all this after the war?" he asks me as we get back into the jeep.

It is a question I have heard everywhere. The taxi driver who took me from Waterways to Fort McMurray asked me the same thing, and the man in the bookstore on Jasper Avenue in Edmonton and the barber at Dawson Creek. Behind their questions was a fear that this was only a transient wartime development and that after the war the country would sink back into relative neglect and stagnation.

Today at Washington and Ottawa members of an international commission are preparing to answer this question. The United States has appointed Dr. Alvin H. Hansen of Harvard University, and James C. Rettie of Portland, Oregon, Alaska counselor to the National Resources Planning Board, and Canada has assigned Dr. Charles Camsell, deputy minister of mines and resources, and Dr. W. A. Mackintosh of Ottawa. All of them know the northwest well and none better than Dr. Camsell, who was born at Fort Liard in the Northwest Territories and has traveled by dog team, boat and plane to its remotest settlements. Upon them has devolved the task of carrying the wartime development of Alaska and the Canadian Northwest into the postwar years.

A network of highways has been built from Edmonton to Nome. A new oilfield has been brought into production with fifteen hundred miles of pipeline carrying the oil to

Whitehorse and Fairbanks. A telephone-teletype line, about twenty-two hundred miles long, with repeater stations every hundred miles, from Edmonton to Whitehorse is in operation. Splendid new airfields, designed for the big transports of today and the bigger air liners of tomorrow, now space the wilds. Along the coasts new port facilities have been constructed. It is an achievement that would have seemed incredible before the war. In less than two years the work of decades has been accomplished and a new page written into American and Canadian history. Yet, great as these wartime achievements are, they are still only a beginning.

"We are on the verge of a great new era in the north, the outline of which we can only dimly perceive," Hon. T. A. Crerar, Canada's minister of mines and resources, said to me when I saw him at Ottawa. "In building new roads as part of our war effort we are also pioneering new paths for the peace. I am convinced that they will give us access to important new mineral resources and enable new areas to be developed. And I believe that Canada will hold a strategic place in air transportation. Tomorrow there will be three main air routes in the north, one crossing Greenland to Europe, another passing over the Arctic Islands and the North Pole to Russia and a third crossing Alaska to the Orient. All these routes lie across Canada."

Alaska's Governor Ernest Gruening voices similar convictions. He told the legislature in 1941:

It must be clear that concomitantly with the defense program, many other important improvements, for which we have been striving for some years, have come or are coming. They are coming partly in connection with defense, partly because their time has naturally arrived, partly because the

continued effort toward securing these desirable things for Alaska has finally begun to bear fruit.

The time has come, in short, when Alaska should move as rapidly as it can with soundness and safety toward building up its territory as a place of permanent abode, as a community of more and better homes, as an American community increasingly self-reliant, increasingly self-governing, increasingly supplied with those necessities and conveniences of modern life which we like to believe are an integral part of the American standard of living. This is no selfish program. This is no narrow exclusive policy. It is, however, an effort to realize for Alaska a new era in which it shall be less and less a mining camp or a cannery camp to which thousands come seasonally to extract what they can and take it all "down below."

It is time for us to exhibit a greater and more enlightened self-interest in terms of the people of Alaska. And when I say the people of Alaska, I mean those who want to live here and stay here and create here and build here. Our task is to speed the permanent establishment in Alaska of the American breed of home-seekers and home-builders.

For it must be apparent that it is people primarily who make a nation or part of a nation, that it is their character and their joint purpose in building a society which makes a community. The mountains and the streams running from them which store the great mineral wealth that has been, is being and will be taken out—these by themselves do not constitute Alaska. It is the people who come and make their livelihood and settle, establish the American principles of self-government and the ideas of a democratic society on the basis of the products which they develop—they constitute the Alaska to which we should dedicate our efforts.

The tremendous wartime projects have opened up Alaska and the Canadian Northwest. Yesterday they enabled the territory to be successfully defended when the Japanese

obtained a temporary foothold in the Aleutian Islands. To-day they provide the bases and the lines of communication for an offensive to be launched against Japan and afford a route over which supplies can be sent to the Soviet Union. But tomorrow, when peace comes, what then?

I think that one fact has been established beyond dispute. Alaska languished until the war forced recognition of its strategic importance and neglected resources. The Yukon and the Mackenzie District were even more neglected except for isolated mining development. Yet, in the course of the war, the entire territory is being transformed. That transformation is being made possible by international co-operation between the United States and Canada and by planned development, with modern techniques and equipment utilized to the full. In the postwar period there will also have to be planned progressive development of the resources now made available by the new system of communications linking Alaska and the Canadian Northwest with the rest of the continent.

The northwest needs people. But it must also have new industries to induce those who have gone there during the war to make their homes in the territory and to provide a livelihood for the thousands of people who are already looking to it as a new frontier for settlement. Alaska alone is capable of supporting many times its present population, as Anthony Dimond, Alaska's lone representative, has constantly impressed upon Congress, on one of which occasions he said:

Let me point out once more that Sweden and Finland lie in the same latitude as Alaska. Finland touches the Arctic Ocean on the north and the Gulf of Finland on the south, and it is cut off from Sweden by the Gulf of Bothnia. Both of these countries are far enough removed from the Atlantic Ocean to

be measurably deprived of the warming and moderating influence of the Gulf Stream. The climate of these two countries is, taken by and large, approximately the same as that of Alaska. So when I conclude that the Territory of Alaska is capable of supporting in comfort a population of several millions, I am not drawing at all upon my imagination but basing my conclusion upon what has been done in the old world and upon an impartial consideration of geographic and scientific facts.

Since the Alaska Highway was opened hundreds of enquiries from all parts of the United States have been sent to government offices in Washington and Ottawa, Edmonton and Victoria, and Juneau. Most of them are from people who are thinking of settling in Alaska or northern Canada after the war. A farmer in California wants to know about the Matanuska Valley. Another farmer in Utah wants information on the Peace River country because he has been impressed by a report he has heard that it has never had a total crop failure. A miner in Colorado has a friend who is working along the Alaska Highway. His interest has been aroused by his friend's letters and he wants information on mineral resources. I have seen some of these letters. Their writers ask questions about the climate, the soil and the resources. They want to know about transportation, housing and living conditions. Some of them reveal a surprising knowledge of the country and others an ignorance that is not so surprising in view of the persisting misconceptions.

When I returned from Alaska people invariably asked me one question.

"Cold up there, wasn't it?" they enquired as though they really needed no telling.

Most of them were a little incredulous when I told them

that it was colder at Ottawa than at Fort McMurray around the same time and warmer at Fairbanks when I left than in Seattle when I arrived.

The greater part of the new development lies west of longitude 115 degrees west and between 55 and 65 degrees north. This includes the western half of the Mackenzie District, the Yukon and Alaska, and parts of northern Alberta and British Columbia; in all, an area of more than a million square miles. None of the new development is in the High North across the Arctic Circle, although geological parties are conducting a search for oil in the Arctic regions of Canada. Norman Wells is at approximately the same latitude as Fairbanks and Nome, but still south of the Arctic Circle.

Within this vast region there is a great variation in climate, from the wet coastal regions of Alaska where the temperature in winter ranges from twenty to thirty-five above zero to parts of the interior where it is extremely cold and the temperature is often fifty and sixty degrees below zero. If it is possible to generalize about so vast an area, except for the coastal regions of Alaska, the winters are longer but no colder than in many other parts of Canada and the United States, Saskatchewan, Minnesota and New England, for instance. And while the summers are shorter they are as warm as in many parts of Canada and the United States, with longer hours of daylight. At Fairbanks, where the sun just dips below the horizon at the height of summer, the temperature sometimes rises to ninety degrees in the shade. Similarly, temperatures of ninety degrees and higher have been recorded at Dawson City and Fort Norman.

Vilhjalmur Stefansson, the famous Arctic explorer, who

is now adviser to Pan American Airways, has this to say about the climate of Alaska: *

If you want to find out how we Americans like the Alaskan climate, ask the people of Fairbanks. Two thirds of Alaska is in the basin of the mighty Yukon and Kuskowim rivers. The climate of Fairbanks is typical of that two thirds. It is a land of forest, which means that the air in winter can be very still, and this, as in New York's Adirondacks or the Maine woods, means that it can be very cold. Last winter the lowest record was seventy-two degrees below zero. In summer the highest temperature so far recorded is ninety-nine degrees in the shade, which means July weather similar to that of northern Michigan, which is regarded as a summer resort country. Most of us, it may be assumed, would like Fairbanks in July; the question probably is, how would you like Fairbanks in January?

W. H. Bloom, superintendent of schools, asked the teachers to tell their pupils that nobody cared whether they like January better than July or vice versa. What was wanted by the teachers and many other people was to know which they really preferred. The vote was taken immediately, so the children had no opportunity to argue with each other. For the whole school system, from the first grade to the seniors in high school, the vote was about three to two in favor of January as being pleasanter than July. . . .

Fairbanks stands for the two thirds of Alaska which is the forested interior. The feeling about the climate is no different along the coast. Nome, for example, is a prairie town, wind-swept like Fargo, Grand Forks, Winnipeg and Regina. A vote taken there recently showed that the people of Nome like the climate better than those states in the union or the countries of Europe from which they came. And furthermore, the vast

* *Pic*, May 25, 1943.

majority and especially the children, preferred winter to summer.

Most of the enquiries sent to government offices are from people who want to go farming in Alaska and the Canadian Northwest. And while their letters ask pertinent questions about soil and frost and rainfall, the fact that they recognize farming to be possible shows how far the legend of the north as a region of ice and snow has been broken down. American soldiers returning from Alaska tell the folks back home that they have seen cabbages and onions, string beans and peas, raspberries and currants, growing in the gardens at Fairbanks. They tell them of the acres of potatoes and the fields of golden grain they have seen on the farms in the Tanana River valley, potentially the greatest farming area in Alaska. The farmers there could also tell them that their wheat yields an average of between twenty and twenty-five bushels an acre and suffers less from frost than many wheat-growing areas in Saskatchewan and Alberta.

The Tanana River valley has a growing season of little more than a hundred days, but in that period the long hours of daylight produce phenomenal growth of wheat, oats and barley, vegetables and small fruits.

Even north of Fairbanks, beyond the Arctic Circle, while farm crops cannot be raised with any success, fine vegetable gardens are being grown.

What is true of Alaska is also true of the Canadian Northwest, and particularly of the Mackenzie District where gardens have been cultivated since the first traders and missionaries penetrated the territory. Below the surface is the permanent frost, but the few inches of soil thawed in the spring give an astonishing yield.

When Albert Lawrence, superintendent of the experimental substation at Fort Vermilion, Alberta, made a tour of the Mackenzie River valley in August, 1942, he reported to the Canadian Department of Agriculture: "The number of worthwhile gardens in Fort Simpson in comparison with the number of residents is quite high and nearly every permanent home has at least a potato patch."

At the farm operated there by W. A. M. Truesdell, the Indian agent, he found corn, planted on May 20, ripe by August 27, and tomato plants, started in a hotbed in early May and set out in the open in early June, bearing large green fruits when the first frost occurred on August 29.

Farther north, at Fort Norman, he found good root crops of beets, carrots, turnips and potatoes in the gardens and at Norman Wells he saw the garden from which the Imperial Oil Company supplies its camp with vegetables.

"Cautious consideration of such information and general observation, especially from the air, of the territory around Fort Norman would indicate that there is a vast area on both sides of the Mackenzie River, but perhaps more on the east side, which could be brought under cultivation," he reported. "This, however, would require considerable work, as the spruce and poplar are quite thick in places. Nevertheless, I am of the opinion that this land will be cleared and made available for agriculture by settlers as it becomes populated in the not too distant future."

Finally, at Aklavik, about 170 miles from the Arctic coast, he inspected the dairy farm successfully maintained by Dr. Livingstone, despite the difficulties of obtaining sufficient feed for the cattle during the long winter.

Most of these points are already linked by highway with the Alaska Highway, while it is certain that the highway system will eventually be extended to Aklavik.

Development of the northwest requires the promotion of industry on a wide scale and the subsequent encouragement of agriculture to feed a large population. Until now, industrial development has been restricted to certain areas, both in Alaska and the Canadian Northwest. Farming, which must be secondary to industry, has not been encouraged. A few experimental farms have been established, but the scope of their work has been narrowed by the lack of funds and equipment. Much of the study and research that will enable farming to be developed successfully throughout the northwest remains to be done.

Lawrence's recommendations reflect a recognition of this fact.

"The large network of well-constructed highways that is now being built up in the Northwest Territories as a subsidiary war measure to link up the various airfields and settlements as far north as Norman Wells and west to Whitehorse, connecting with the Alaska Highway, after the war will serve as feeders to open up this vast territory for settlement," he writes.

"I would suggest that the tentative possibilities for such settlement should not be too greatly emphasized. For although there will be many good opportunities, it will be only the most experienced and determined class of settlers that will ever succeed in these northern parts and, in my opinion, it would be fatal to the successful development of these areas if a rush of settlers were allowed to begin."

Settlement, however, is already beginning. What were villages when the United States Army commenced its gigantic program of construction are already towns. Big American and Canadian mining companies already have their prospectors locating claims in the new areas. The development of the vast regions now being opened up can be

influenced. It cannot be halted. The best way to prepare for the future that is already upon us is through institution of a program of agricultural research in both Alaska and Canada.

What can be done has been shown in the development of Siberia. Alaska is often compared to the Scandinavian countries, which it closely resembles both in climate and terrain. The American north, from the Hudson Strait to the Bering Strait, is better compared to Siberia, with which it shares almost the entire Arctic regions.

The Soviet government has established a chain of agricultural experiment stations across the north of Siberia. As new industries are developed and cities are built around them the land is brought under cultivation, with all the advantage of long experimental work. The soil around the new city of Igarka, on the Yenisei River, is frozen too, but this has not precluded the successful raising of vegetables and fruits. The marshes have been drained and crops grown. Cucumbers, tomatoes and melons are grown under glass.

All this can be done in Alaska and Canada. I have seen what pioneer farmers have already accomplished on a limited scale. With the application of scientific methods over wide areas the growing cities of the north and those that will presently be established can be partially supplied, at least, by the new agricultural areas.

The construction of the Alaska Highway itself, I was told at Whitehorse, uncovered no important mineral deposits. But in the areas to which it gives access there is a wealth of natural resources.

"This country has never been prospected," George De Savoye, who has spent the past ten years prospecting along

the Mackenzie River and through northern British Columbia, said to me when I met him along the Alaska Highway. "What few men have been through it just went up and down the creeks looking for gold, like myself. I know there are other minerals. If parties were sent out on a systematic survey, there should be some important discoveries."

In the summer of 1943 parties were beginning a systematic survey extending across the Canadian Northwest and into Alaska. Most of them, however, were engaged in exploring the new areas of Canada, of which least is known.

Some of the parties were sent out by the Canadian government, which itself has only sketchy information on the resources of the vast region. Others were sent out by the big mining companies in the United States and Canada. A few, old-timers who rush to the scene of every new mining development, were prospecting only for themselves. All of them were looking for oil and the rare minerals required for war industries. There were probably thousands of others who would also have invaded the region except for the Canadian government's ruling that only those prospectors who could show that they were adequately financed and equipped and supplied with transportation would be permitted to travel over the highway.

Miners and prospectors in such centers as Edmonton and Vancouver do not like this ruling, I found. Many of them pointed out to me that, in effect, it bars nearly all but the prospectors sent in by the big mining companies from entering the new areas.

"The big companies have their own planes to fly their men in," one prospector at Edmonton said to me. "I've used planes quite a bit myself, but it's impossible to charter a plane these days. It's almost as hard to get transportation

over the road to take in supplies, so it means that a lot of us are kept out."

It is difficult to see what other course could have been taken. The Alaska Highway is a military road intended primarily for the transportation of supplies and equipment to Alaska. The Canadian government has reserved a strip a mile wide on each side of the highway through the Yukon Territory and the government of British Columbia has also reserved an undefined strip along the highway through the province, but this does not prohibit prospecting in the reserved areas. If unrestricted prospecting were permitted, the rush of men to get into the new areas might seriously impede military traffic. Yet, if all prospecting were prohibited, the country might be denied minerals needed for war industries. Where wartime projects in Canada are being financed by the United States government, the Canadian government has the first right of purchase after the war, but this does not apply to private development.

If, however, newly discovered mineral resources are held but not developed, as they have been in the past, the development of the northwest will be retarded. All leases at Norman Wells were held for many years before any effort was made to develop them and the area is only being opened up now that the oilfield has been brought into production and a highway built.

Even where mines are developed, too often the dependence of the towns that grow up around them upon the single industry, while other resources are neglected, prevents stable development. When the mines close down, the people drift away and a ghost town is left. And not all the ghost towns in the northwest were left by the men who rushed to the goldfields of the Klondike.

Governor Gruening of Alaska cites the instance of the famous Kennecott mines, near Cordova, which were closed down by their owners in the United States when the rich copper deposits petered out after producing around \$200,000,000. The men thrown out of work found other employment in the fishing industry and later on defense projects. Elsewhere the people similarly deprived of a livelihood have not been so fortunate.

I lived for a time in the ghost town of Discovery, about eight miles from Atlin in northern British Columbia.

The buildings on the main street, as long as the main street in Whitehorse at the time, were still standing, their gaping windows overlooking the creek where thousands of miners once worked. The old hotel leaned on its rotting foundations and the weeds grew in summer between the broken boards of the sidewalks by what once had been stores. The creeks were worked out. Only a few men lived there, an old miner who sank the wages he earned during the summer into his claim on a nearby creek, three Swedes who were still washing gold from the ground on which the first miners had dumped their tailings, and those like myself who could find no place in crowded Atlin. Now the town of Atlin, its gold mines closed down for the duration of the war, is itself only the ghost of the busy little center it was at that time.

It is a familiar process in the northwest—the boom period, the gradual exhaustion of the mines, and the death of the town—and to some extent an inevitable one. But it can be partially offset by the development of other resources and the promotion of secondary industries.

What the ultimate mineral wealth of Alaska is no one can estimate. Although the Geological Survey has been

exploring and mapping the territory since 1895, great areas are still largely unknown. The mining industry is still young. It has tapped only the most accessible deposits and, until recent years, only the precious metals and the commonest base metals. Yet from 1880 to 1940 its total mineral production was estimated at more than \$800,000,000.

Gold, which until the war generally halted production, accounted for more than 80 percent of Alaska's annual mineral output, is found from Juneau to Nome. Production at Goodnews Bay, where in 1926 an Eskimo first reported finding "white gold," has raised the territory to third place among the world's producers of platinum, ranked only by Canada and the Soviet Union. Alaska's untouched mineral resources are greater even than those already being worked. There is cinnabar in the Kantishna area near Mount McKinley National Park and in the Kuskowim River basin. Manganese and chromite have been found in the Petersburg and Ketchikan areas. Antimony has been discovered at various places in the territory and the producing mine in the Kantishna area is the only one in the United States and its territories.

Alaska has no steel industry, but it has the coal, iron and limestone for one to be established. It has no oil industry, although wells in the Katalla district have produced some oil, but it has promising oil reserves. On the Arctic coast near Point Barrow there are coal and oil awaiting development. With its other minerals—tin, mercury, nickel, tungsten, silver, lead, zinc and copper—and its deposits of graphite, asbestos, barite and sulphur, Alaska is potentially one of the richest territories in the world.

The Canadian Northwest has an equal wealth of natural resources. Besides radium-silver on Great Bear Lake and gold in the Mackenzie District, the Yukon and northern

British Columbia, there is tungsten, molybdenum, niccolite, zinc and lead in the Mackenzie District and copper on the Arctic coast at Coppermine. At Pinchi Lake, north of Fort St. James in northern British Columbia, a big mercury mine has been brought into production during the war. In the same area and north along the Alaska Highway discoveries of manganese, chromium, vanadium, tungsten and molybdenum have been reported. Here too there are tremendous deposits of iron and coal.

In the course of the war we have opened the treasure house of the continent. It has the minerals, the water power, the oil, the forests and the potential farm areas. Our gigantic task in the postwar period will be to translate this latent wealth into terms of cities and homes and jobs for the people who will come to build the country. Without this it is worthless.

The Alaska Highway system has given us access to this great new frontier, but it is still incomplete and still only a beginning. Roads and railroads still have to be built beyond the Arctic Circle. The northern sea route across the top of America, the counterpart of that which the Soviets have pioneered across the top of Europe and Asia, still has to be developed, even though planes can cross with ease where ships must push their way cautiously through the ice. Canada still has to build roads through the eastern half of the Mackenzie District and through the Keewatin District, an area as vast as that already opened.

These are projects for the future. They are not far off if the postwar years are as crowded with achievement in the north as these war years. In Nome the people believe that the railroad will be extended westward from Fairbanks and the logical consequence of this would be con-

struction of a rail link to connect Fairbanks with the Canadian National Railways system across northern British Columbia. The Canadian National Railways has already placed before the reconstruction committee of the House of Commons a proposal for railroad extensions through the Mackenzie River basin and northern British Columbia after the war.

In the cities along the Pacific coast, however, the people regard construction of a coastal highway through northern British Columbia to connect with the Alaska Highway as an immediate project rather than a plan for the future.

The protest aroused when the route for the Alaska Highway was selected has not died down. Seattle has always considered itself the gateway to Alaska, and Vancouver has occupied a comparable position in relation to the Yukon. Both cities were centers of the campaign for construction of a highway to Alaska in the years before the war. Both were centers of opposition to construction of the highway over the Edmonton-Fairbanks route. And now that the highway has been built there is a fear that northern trade will flow through Edmonton down through Alberta and Montana and through Winnipeg down through Manitoba and Minnesota.

In July, 1943, Premier John Hart of British Columbia announced that his government was prepared to contribute \$6,000,000 toward the cost of building a road north from Prince George to the Alaska Highway. Around the same time the Alaska Highway Committee of the Pacific Northwest Trade Association, representing business interests in Washington and British Columbia, met in Seattle to launch an international campaign for the road, which will cost around \$18,000,000.

Construction of the Alaska Highway over the Edmonton-

Fairbanks route was justified by the fact that it linked a chain of airfields already built by the Canadian government. It was further justified as part of a planned development involving the building of a subsidiary system of roads and pipelines. The "B" route, which proposed a road from Prince George to Watson Lake, was rejected for the "C" route from Dawson Creek because it would not link the airfields at Fort St. John and Fort Nelson. With the airfields now linked by the Alaska Highway there is no longer any reason why the road from Prince George should not be built, apart from the opposition of the powerful railroad lobby in Washington which was concerned in urging the advantage of the Dawson Creek route over the Prince George route.*

Until the coastal road is constructed the Alaska Highway system will remain incomplete. By building this route, the industrial centers of the Pacific coast, Vancouver, Seattle, San Francisco and Los Angeles, will be directly linked with the cities of Alaska and the Alaska Highway will be provided with a second railhead. This road will also open up another large area in northern British Columbia now skirted by the Alaska Highway and enable the cities in the Alaska Panhandle, Juneau, Ketchikan, Petersburg and Wrangell, to acquire connections with the rest of the continent by building subsidiary roads. Skagway is now linked with the Alaska Highway by the new road from Haines to Champagne, but the other cities of the Panhandle still lack road connections.

It will also bring nearer the dream of a railroad to Alaska,

* Dawson Creek is served by the Alberta Northern Railways, jointly owned and operated by the Canadian Pacific Railways and the Canadian National Railways. Prince George is served only by the Canadian National Railways.

the route for which, from Prince George to Fairbanks, has already been surveyed. A rickety railroad, the Pacific Great Eastern, which has never been completed, already runs through British Columbia from Squamish to Quesnel. Construction of some forty miles at the southern end would link it with Vancouver and the Great Northern Railway to Seattle. Only another eighty miles remain to be built at the northern end to connect it with Prince George and the Canadian National Railways line there. From Prince George, along the Rocky Mountain "trench," north to Carmacks, Y.T., and west to Fairbanks, it is approximately fourteen hundred miles and even shorter by a more westerly route from Vanderhoof, B.C., to Carcross, where it could also be linked with the White Pass and Yukon Railway.

It is obvious, however, that Seattle and Vancouver can never again enjoy the same virtual monopoly of trade with Alaska and the Canadian Northwest that they did when a wilderness separated Fairbanks and Edmonton and the only practical commercial route was by sea from the Pacific coast cities.

The frontiers are being pushed north and new cities are rising to pre-eminence along the new routes. In the post-war period the cities of Alaska will be able to trade directly with the Orient. The port of Prince Rupert, in northern British Columbia, which is closer to the Orient than either Vancouver or Seattle and closer to Alaska and the Canadian Northwest, will certainly enjoy a greater share of the trade. Edmonton is the logical gateway to the Mackenzie District. No city in the west will remain unaffected by the profound implications of the opening up of the northwest. It is an event as important to North America in this century as the opening up of the West was to the last.

The Alaska Highway system is more than a network of communications enabling us to carry the war to Japan. It is more than a vast playground for tourists, although it offers tourists everything. It is even more than a new frontier of opportunity for Americans and Canadians in the postwar period. It can, in a very real sense, become a highway to the future, the physical link between the United States and Canada and the Soviet Union and China which can facilitate the co-operation of their peoples in building the world of tomorrow.

Vice-President Henry A. Wallace envisages the day when the continents of America and Asia and Europe will be joined by a great highway system. In a speech he made at Madison Square Garden, New York, in November, 1942, he stated:

I would like to refer to a conversation I had with [Vice-Premier and Foreign Commissar] Molotov when he was here last spring. Thinking of the unemployment and misery which might so easily follow this war, I spoke of the need for a productive public works program which would stir the imagination of all the peoples of the world and suggested as a starter a combined highway and airway from southern South America across the United States, Canada and Alaska, into Siberia and on to Europe, with feeder highways and airways from China, India and the Middle East. Molotov's first reaction was: "No one nation can do it by itself." Then he said, "You and I will live to see the day."

That day is nearing for the Americas. The gaps in the Central and North American sections of this highway, from Panama City to Nome, are now being filled. And in South America, when the highway system through Colombia and Ecuador is completed, the road will run from Buenos Aires

to Panama City, linking the entire continent by an international highway.

This vast new system of highways which is coming into being during the war and the rapid development of air communications are not only bringing a new concept of geography but imposing upon us new obligations of international co-operation.

The relations between the United States and Canada are in themselves proof of what can be achieved through co-operation.* The United States has built thousands of miles of highways and pipelines through the Canadian Northwest. By an exchange of notes between the two countries in January, 1943, agreement was reached that within one year after the war all immovable defense installations built by the United States in Canada shall be relinquished to the government of Canada or the provinces. Other installations are either to be removed from Canada or appraised and offered for sale at their commercial value, with the Canadian government having the first option of purchase.

The Truman Committee, when it examined this agreement, particularly in its bearing on the Canol Project, in November, 1943, left a confused impression. Until the committee held its investigation, the essential details of the Canadian oil development on which the United States was spending \$138,000,000 had been withheld for military reasons. And when experts appearing before the committee

* In a speech to the Canadian Institute of Mining and Metallurgy at Vancouver, B.C., in November, 1943, Dr. Charles Camsell, Deputy Minister of Mines and Resources, stated that the Soviet Union was co-operating with Canada in the development of the North. Revealing that the Soviet government was furnishing the Canadian government with data on the North, Dr. Camsell said: "Our particular purpose is to ascertain Soviet treatment of every phase of activity in the so-called 'frozen belt.'"

expressed divergent views it was difficult for anyone unfamiliar with the project to determine who was right—Representative L. H. Gavin, who described Canol as “a gigantic boondoggling project for opening the Canadian wilderness” and urged that it be abandoned, or James H. Graham, special assistant to Robert P. Patterson, United States Under Secretary of War, who held that the United States Army had been justified in taking its “bold and prompt action in the dark days of 1942.”

The committee, with justification, criticized the waste involved in carrying through a hastily conceived project. Unlike the United States Army Engineers who built the Alaska Highway, the men who developed the Norman Wells oilfield and laid the pipeline were able to draw upon Soviet experiences in overcoming difficulties similar to those they encountered. Even so, their own lack of experience in construction work under subarctic conditions led to their making mistakes, and mistakes meant time lost and material wasted.

With equal justification, the committee questioned a contract under which the United States government, at an estimated cost of \$43,000,000, has developed an oilfield for Imperial Oil Limited, with a reduction from one dollar and twenty-five cents to fifty cents a barrel for the first 1,500,000 barrels delivered to the army the only provision for repayment. While some Americans are concerned in assuring the United States rights to oil from the new field, many Canadians believe that if, after the war, the pipeline is operated as a private venture—it must not be dismantled without approval of the Canada-United States Permanent Joint Defense Board—the Canadian government should exercise its right under the agreement to make

"regulations and conditions in order to safeguard the public interest." And the public interest lies in the full utilization of the new projects for the planned development of the country.

These criticisms, however, do not fully explain the opposition to the Canol Project and the demands for its abandonment. Representative L. H. Gavin, one of the strongest opponents of the project, revealed in his testimony before the committee that he was more interested in having oil reserves developed in his home state of Pennsylvania. Similarly, other opponents of the project believe that the great oil reserves of Alaska, such as the 20,000 square miles on the arctic slope explored in 1943 by Norman Ebbley, United States Bureau of Mines engineer, should have been developed. Their opposition is not to the expenditure of millions of dollars on oil development in the Northwest but to the location of that development in Canada. And their argument is logical, at least, in that the oil they want developed is not in Pennsylvania but in Alaska, where it is needed.

When the Canol Project was conceived in 1942 the United States and Canada had many vulnerable points in their Pacific defenses, and one of the most vulnerable was Alaska. To defend Alaska, lines of communication had to be constructed far enough inland from what might become a battlefield to be protected from attack. The United States Army was not going to develop oil reserves in areas that might be occupied by the Japanese and that were dependent on sea and air transportation. The situation prevailing at that time was described by Brigadier General Walter B. Pyron when he told the Truman Committee that the United States Navy had been unable to guarantee pro-

tection for tankers sailing between California and Alaska. These were the military considerations that led to the choice of the Norman Wells field for development.

An equally important factor, as Donald MacDonald pointed out to me, was the existence of the chain of airfields already constructed between Edmonton and Whitehorse by the Canadian government.

"When the airfields were constructed I knew that the route of the Alaska Highway was being predetermined," MacDonald said to me when we discussed the question in Seattle. "The road followed the airfields and the pipeline came after the road."

The weakness of the Canol Project is in the small diameter of the oil pipeline from the field at Norman Wells to the refinery at Whitehorse. This is capable of carrying 3,000 barrels a day, the quantity Imperial Oil engineers originally undertook to supply, from a field which now has a developed capacity of 20,000 barrels a day. Yet a pipeline with a diameter 50 percent greater would have carried 10,000 barrels a day. While charges were made before the Truman Committee that the small capacity of the pipeline would conserve the field for postwar exploitation, it is also true that the present pipeline is likely to have little commercial value because of the relatively high cost of operating and maintaining it. If Imperial Oil is interested in the postwar development of the Northwest, in supplying aviation and other needs and conceivably, in transshipping oil and gasoline to Pacific Coast ports, a bigger pipeline would have been to its advantage. The explanation offered to me by United States Army Engineer officers when I commented on the size of the pipeline was that it had been hoped to complete the project in a far shorter time than it actually took and four-inch pipe was decided upon because it was

the most readily obtainable and the easiest to transport.

Had the project been undertaken with a studied view to postwar development, the route from Norman Wells to Fairbanks proposed by Vilhjalmur Stefansson would have been more practical.* But, as I have already pointed out, there are many parts of the new development where military expediency has not coincided with the most practical measures for the development of the Northwest.

No one seriously concerned in developing the country, in transforming it as the Soviets have transformed Siberia, can advocate abandonment of the Canol Project. For all its weak points, it has brought positive results which can have tremendous bearing on the future. As Under Secretary of War Robert P. Patterson stated before the Truman Committee: "The results so far have surpassed our hopes. We uncovered a rich continental source of oil, far beyond the original target of 3,000 barrels a day. Twenty thousand barrels a day is now assured. We have already uncovered an estimated pool of 50,000,000 to 100,000,000 barrels." Immediately the project is serving the airfields used by the planes flown across Canada and Alaska to the Soviet Union. And it will be needed in the future to supply the passenger planes and transports flying the same routes.

If the Truman Committee's investigation revealed any indisputable fact, it was that the same conception of Alaska which led to its becoming known after the purchase as "Seward's Icebox" still persists among some legislators, just as there are others who have learned so little from the past that they regard the new developments as a means of

* Commenting on the investigation into the Canol Project, Vilhjalmur Stefansson stated: "The Truman Committee is criticizing the army for doing the wrong thing. It should criticize the army for doing the right thing in the wrong way."

furthering the war against the Soviet Union they hold to be inevitable. The one is as outdated in our changing world as the other.

The Alaska Highway and the Canol Project have been built. Now they must be used to build the country. In no other way can they be economically maintained after the war. The United States has spent millions of dollars in Canada which, in effect, will amount to an outright gift to the Canadian people, provided it is properly used. By doing so it has been able to transform Alaska into a powerful base for offensive operations which will certainly affect the entire course of the war in the Pacific theater. And after the war a new frontier will have been opened up to the American people. Since the purchase of Alaska, gold production alone has returned a hundred times the original cost of the territory. With progressive development Alaska will return infinitely more than the cost of building the new highways. I believe that the American people have never made a better investment for the future than in the Alaska Highway.

Air lines across the Arctic and highways through Alaska have brought the Soviet Union close to the United States and Canada. And beyond the Soviet Union, over the Great Circle air route, lies China. Here, in our own northwest, we have created the physical means of realizing international co-operation, both in achieving victory and constructing the postwar world. Alaska has become, indeed, the land of opportunity.

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